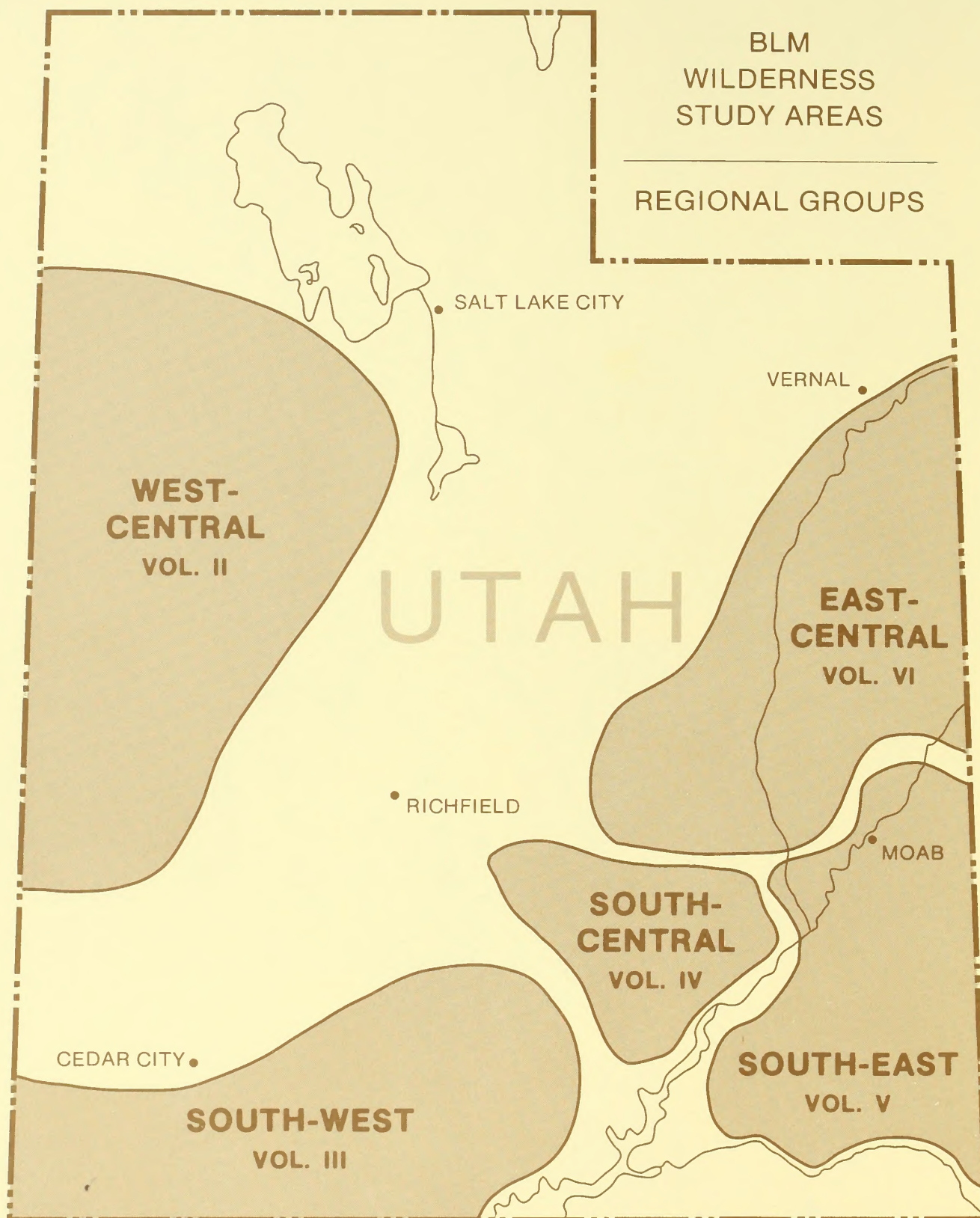


Utah BLM Statewide
Wilderness Draft
Environmental Impact
Statement

Volume IV
South-
Central
Region





This is **Volume IV** of a six volume set. Volume I is the statewide overview. It contains the Glossary and Appendices for all volumes. Volumes II-VI contain analyses for individual Wilderness Study Areas.

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Volume IV South - Central Region

Mt. Ellen-Blue Hills WSA

Bull Mountain WSA

Dirty Devil WSA

Horseshoe Canyon (South) WSA

French Spring-Happy Canyon WSA

Fiddler Butte WSA

Mt. Pennell WSA

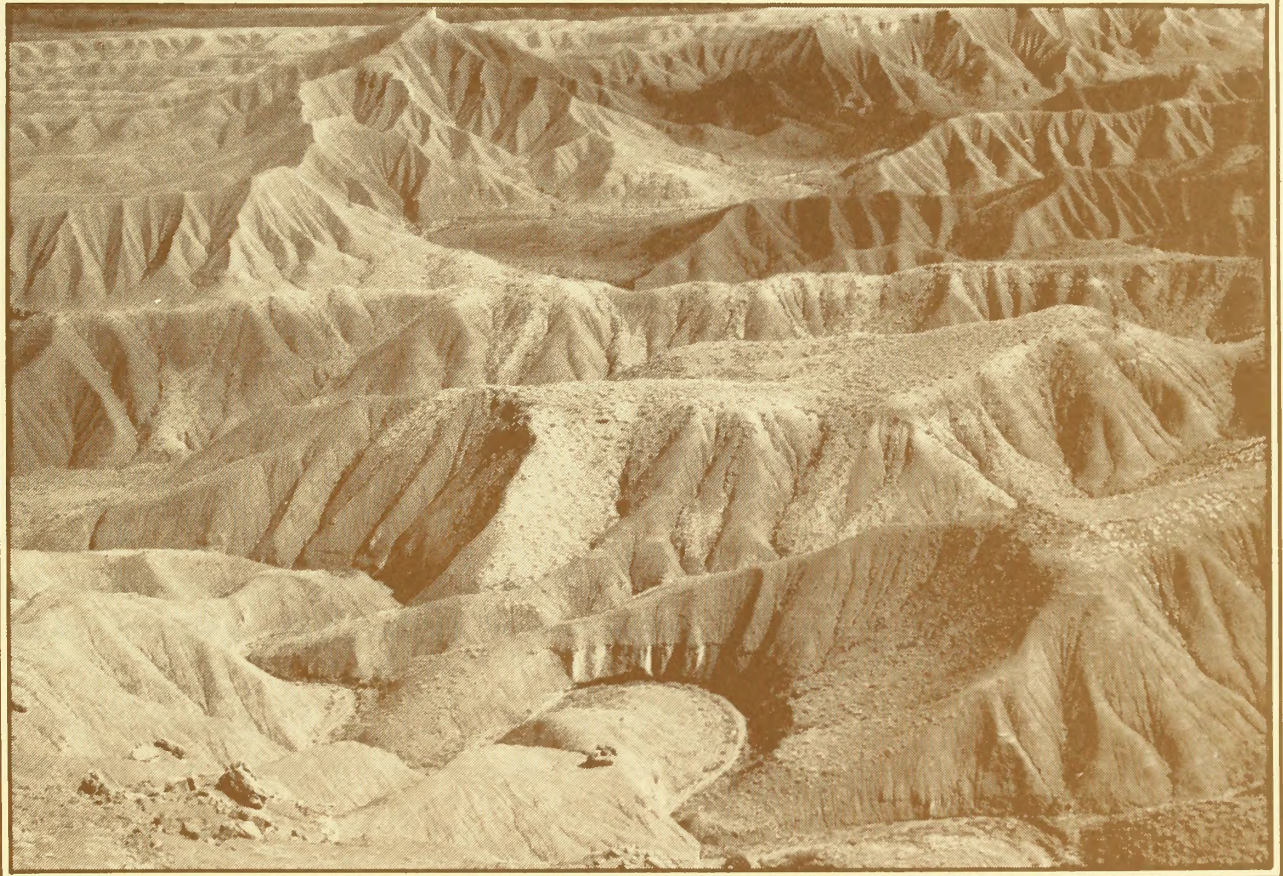
Mt. Hillers WSA

Little Rockies WSA

Fremont Gorge WSA

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

Mt. Ellen - Blue Hills WSA



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Denver, CO 80225-0047

MT. ELLEN-BLUE HILLS WSA

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MT. ELLEN-BLUE HILLS WSA

(UT-050-238)

INTRODUCTION

General Description of the Area

Mt. Ellen-Blue Hills Wilderness Study Area (WSA) contains 81,726 acres of public land (58,026 acres in south-central Wayne County and 23,700 acres in northeast Garfield County). The boundary is about 10 miles west of Hanksville, Utah.

The WSA possesses two distinct topographic areas: Mt. Ellen proper (11,500 feet) to the south and the mesas and barren badlands to the west and north, including the Blue Hills. Vegetation on Mt. Ellen serves as habitat for bison, mountain lion, and mule deer. Predominant vegetation at lower elevations is pinyon-juniper and saltbrush while ponderosa pine, Douglas fir, and alpine fir are found at higher elevations. The higher elevations offer outstanding views of central Utah and Waterpocket Fold.

Estimated annual precipitation ranges from 5 inches near the Fremont River to about 25 inches at the summit of Mt. Ellen. Temperatures range from as low as -20 degrees Fahrenheit (F) in the winter to over 100 degrees F in summer.

Specific Issues Identified In Scoping

General comments received during scoping that apply to all WSAs or to the WSAs in the Henry Mountain Resource Area are discussed in Volume I. Issues and concerns identified in public scoping (USDI, BLM, 1984c) for the Mt. Ellen-Blue Hills WSA are responded to below.

1. *Comment:* It is possible that a dam could be constructed for irrigation and power purposes near the junction of the Fremont River and Sweetwater Creek. Although the site is located outside the WSA, the associated reservoir could flood a portion of the WSA. According to the "Wilderness Management Policy," such reservoirs can be allowed only by Presidential exemption.

Response: The reservoir as presently proposed is outside the WSA and would not affect wilderness designation. The site referred to during scoping has been changed.

2. *Comment:* The occurrence of the sensitive plant species *Astragalus henrimontanensis* in or near the WSA should be considered.

Response: *Astragalus henrimontanensis* has been found in this WSA. It was a candidate

species under review by the U.S. Fish and Wildlife Service (FWS) for threatened or endangered status. During the review it was found to be relatively abundant and has been dropped from further review.

3. *Comment:* There is a need for considerable mechanical vegetation manipulation in this WSA to benefit bison and mule deer herds. The Environmental Impact Statement (EIS) should analyze potential conflicts with these needs and identify a possible resolution of the conflict.

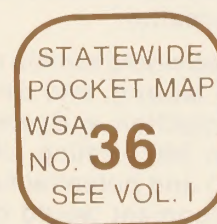
Response: The effect of wilderness designation/nondesignation on a 1,850-acre vegetation manipulation project currently planned in the Dry Lakes/Nasty Flat area is discussed in the Description of the Alternatives, Livestock and Wildlife sections of this document. Vegetation manipulation would be precluded under the All Wilderness Alternative. Mule deer are projected to remain at current low numbers and bison to decline slightly under this alternative.

4. *Comment:* Land use conflicts as a result of wilderness designation are a major issue.

Response: The land use conflicts of wilderness designation are discussed in this analysis for activities such as reservoir construction, vegetation manipulation, oil and gas leasing, etc. All of these conflicts are considered by BLM prior to making wilderness recommendations.

5. *Comment:* The oil and gas potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be high. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS.



but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

During scoping, an alternative was suggested that would allow for future construction of a water project on the Fremont River. This suggestion was not followed since the potential project site has now been revised and would not conflict with the WSA. No other alternatives were considered and eliminated from detailed study for the Mt. Ellen-Blue Hills WSA.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (81,726 acres); and (3) Partial Wilderness (58,480 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

With this alternative, none of the 81,726-acre Mt. Ellen-Blue Hills WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The 6,892 acres (11 sections) of State land within the WSA (refer to Map 1) have not been identified in the MFP for Federal acquisition through exchange or purchase. State lands are analyzed as remaining under State ownership.

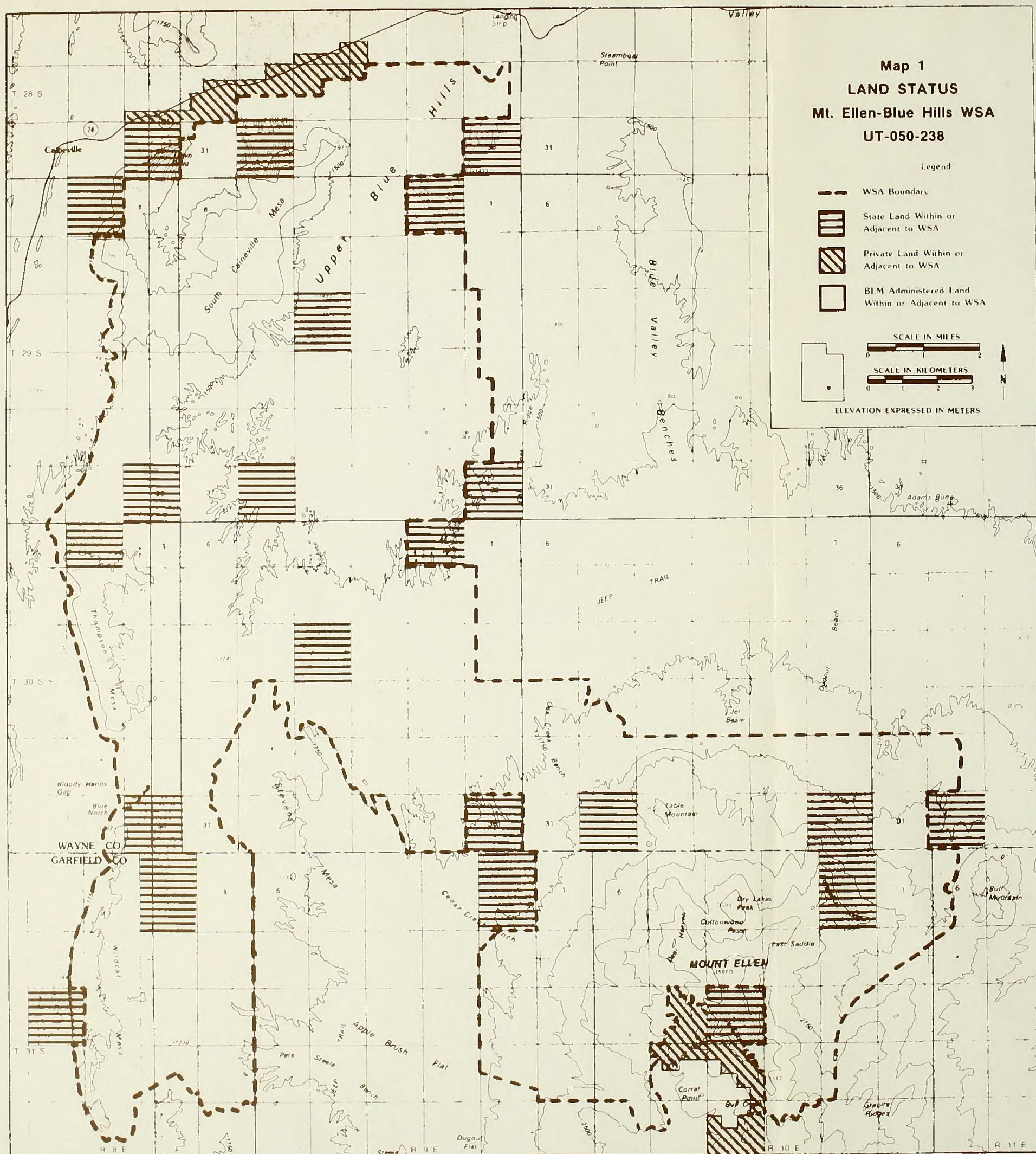
The following are specific actions that would take place under this alternative:

- All 81,726 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on 360 existing mining claims (10,400 acres) and potential future mining claims. Development would be regulated by unnecessary or undue degradation

guidelines (43 Code of Federal Regulations [CFR] 3809). Existing oil and gas leases (73,480 acres) and potential future leases could be developed under Category 1 (standard stipulations) on about 53,310 acres and Category 2 (special and standard stipulations) on about 28,416 acres. Approximately 2,825 acres of surface minable coal in the WSA could be made available for leasing in the future. Sand and gravel associated with aggregate material on Mt. Ellen could be utilized in the future if in conformance with the BLM Henry Mountain MFP.

- The present domestic livestock grazing use of 81,726 acres of the WSA would continue as authorized in the MFP (3,234 Animal Unit Months [AUMs]). The existing five spring developments, six reservoirs, and 2.5 miles of fenceline could be used and maintained, and new rangeland developments could be implemented without wilderness considerations. New rangeland developments currently planned include one reservoir and 1,000 acres of vegetation treatment to provide an estimated 200 AUMs of new forage.
- Developments for wildlife (including 1,850 acres of planned vegetation manipulation in the Dry Lakes/Nasty Flat area to provide an increase of 245 AUMs primarily for bison), watershed, and other resources would be allowed without concern for the wilderness resource if in conformance with the Henry Mountain MFP.
- Approximately 35,000 acres in the Blue Hills area would be closed to off-road vehicles (ORVs). The remaining 46,726 acres, as well as the approximately 12.8 miles of ways inside the WSA and 11 miles of roads that border the WSA, would remain available for vehicular use. New access roads could be planned and built in the future.
- The approximately 16,950 acres of pinyon-juniper woodland would continue to be open to harvest of firewood and fenceposts. Even though there is a potential commercial ponderosa pine harvesting area in Sawmill Basin, no commercial production of any other forest product would be allowed because the existing MFP recommends that no commercial forestry program be developed in Sawmill Basin. This is because of the area's wildlife, scenic, and recreational values and low timber demand.

MT. ELLEN-BLUE HILLS WSA



- The area would continue to be managed under Visual Resource Management (VRM) Class II (63,935 acres), Class III (2,454 acres), and Class IV (15,337 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

With this alternative, all 81,726 acres of the Mt. Ellen-Blue Hills WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character.

It might be necessary for Congress to modify the southern boundary of the wilderness area slightly because of a road that was inadvertently constructed in trespass. The road affected naturalness on about 7 acres (refer to the Affected Environment, Wilderness Values, Naturalness section). On designation, acquisition of 11 sections of State land (approximately 6,892 acres) within the WSA (refer to Map 1) is likely, and would be authorized by purchase or exchange (refer to Volume I for further information regarding State in-holdings). In addition, the State has requested exchange of six State sections (3,521.36 acres) adjacent to and influenced by wilderness designation. Eight of ten State sections adjacent to the WSA would be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. The figures and acreages given for this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

The following are specific actions that would be taken with this alternative.

- All 81,726 acres would be withdrawn from mineral location and closed to new mineral leasing (Category 4) and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 10,400 acres of 360 existing mining claims determined valid. These are primarily uranium claims. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration for wilderness values. Existing oil and gas leases involving the 73,480 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. None of the 2,825 acres of coal in the WSA are now under lease, nor would future leasing be allowed with this alternative. With this alternative, use of sand and gravel resources associated with the aggregate material on Mt. Ellen would not be allowed.
- Present domestic livestock grazing would be allowed to continue as authorized in the Henry Mountain MFP. The estimated 3,234 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (in this case, five spring developments, six reservoirs, and 2.5 miles of fence line) could continue in the same manner as in the past based on practical necessity and reasonableness. It is assumed that, after designation, the construction of new rangeland developments would be allowed if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources, if consistent with wilderness protection standards (refer to Appendix 1). It is assumed that the proposed new reservoir and 1,000 acres of vegetation treatment would not be allowed.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if compatible with wilderness values, needed to correct imminent hazards to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). None are now proposed in the WSA.
- Wildlife transplants and habitat developments would be allowed after designation if compatible with wilderness values. It is

assumed that 1,850 acres of proposed vegetation manipulation for wildlife in the Nasty Flat/Dry Lakes area would not be allowed because this could not be carried out consistent with wilderness protection criteria.

- The entire 81,726-acre area would be closed to ORV use except for users with valid existing rights if approved by BLM in accordance with 43 CFR provisions or for occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland developments or water facilities. About 12.8 miles of existing vehicular ways would not be available for vehicular use except as indicated above. A 0.5-mile section of "cherry-stemmed" road near Table Mountain and about 1.8 miles of "cherry-stemmed" road near Blue Notch would remain open to vehicular use. About 11 miles (10 percent) of the WSA boundary follow existing gravel roads that would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 81,726-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The present use of approximately 16,950 acres of pinyon-juniper for harvest of fenceposts and firewood would no longer be allowed. (Demand has been minimal: under 60 cords and 200 posts per year). With this alternative a potential commercial ponderosa pine harvesting area in Sawmill Basin would not be developed.
- Two trails, Bull Creek Pass to Mt. Ellen Peak and Lonesome Beaver to East Saddle, would continue to be maintained by non-mechanical means.
- Visual resources on 81,726 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious

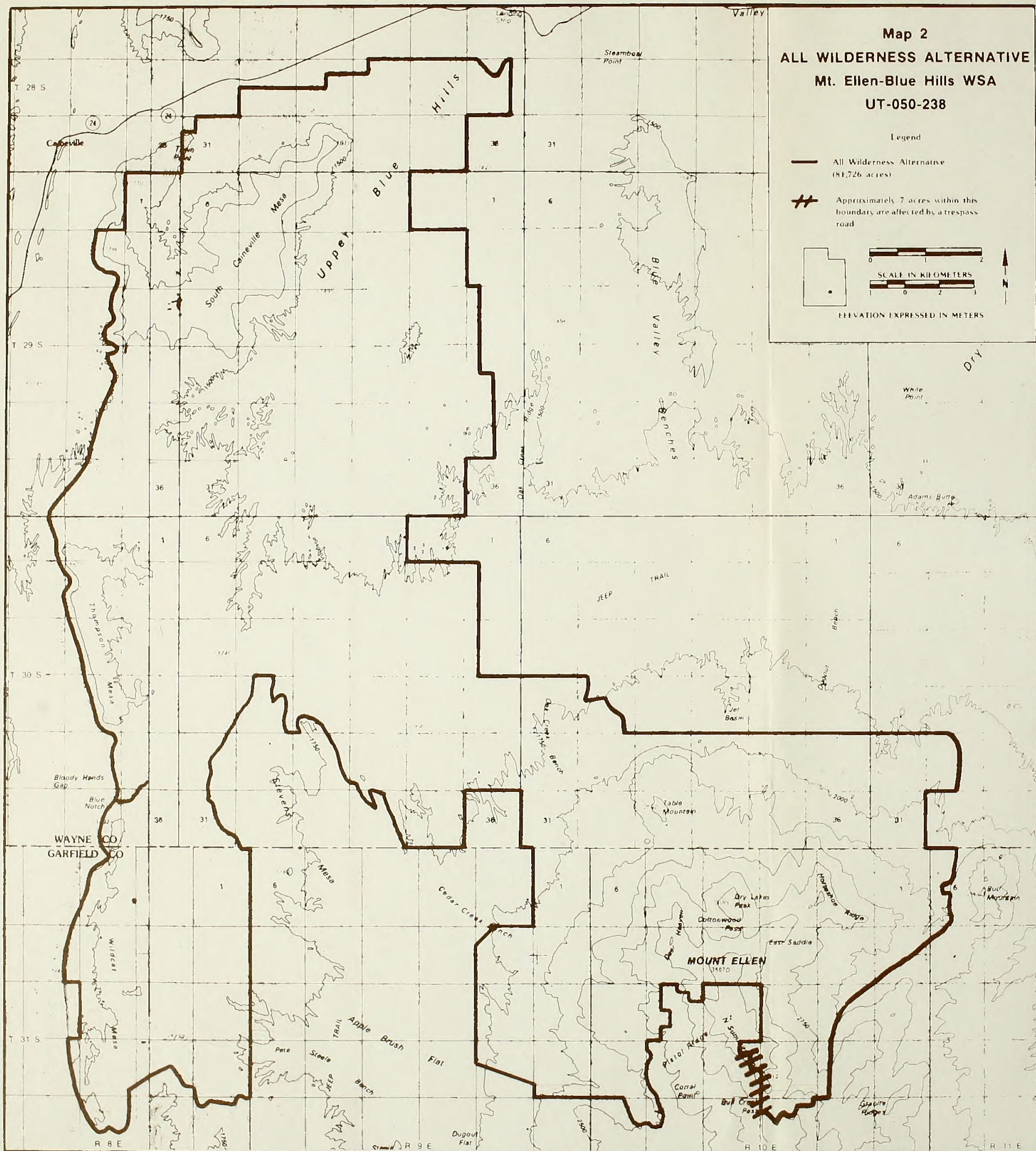
weeds, or disease within the 81,726-acre area would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values; therefore, it is assumed that firefighting would be limited to hand and aerial techniques.

- Any activity for the purpose of gathering information about natural resources in the 81,726-acre area would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

With this alternative, 58,480 acres of the Mt. Ellen-Blue Hills WSA would be designated as wilderness (refer to Map 3). The designated area would include about 43,380 acres in Wayne County and 15,100 acres in Garfield County. The objective of this alternative is to analyze as wilderness that portion of the WSA having the most outstanding wilderness characteristics. The 58,480 acres analyzed as wilderness under this alternative include most of the northern part and all of the southeastern part of the WSA. This generally includes the most rugged and mountainous portion of the WSA. The 23,246-acre area (west side) within the WSA, but outside of that designated as wilderness, would be managed in accordance

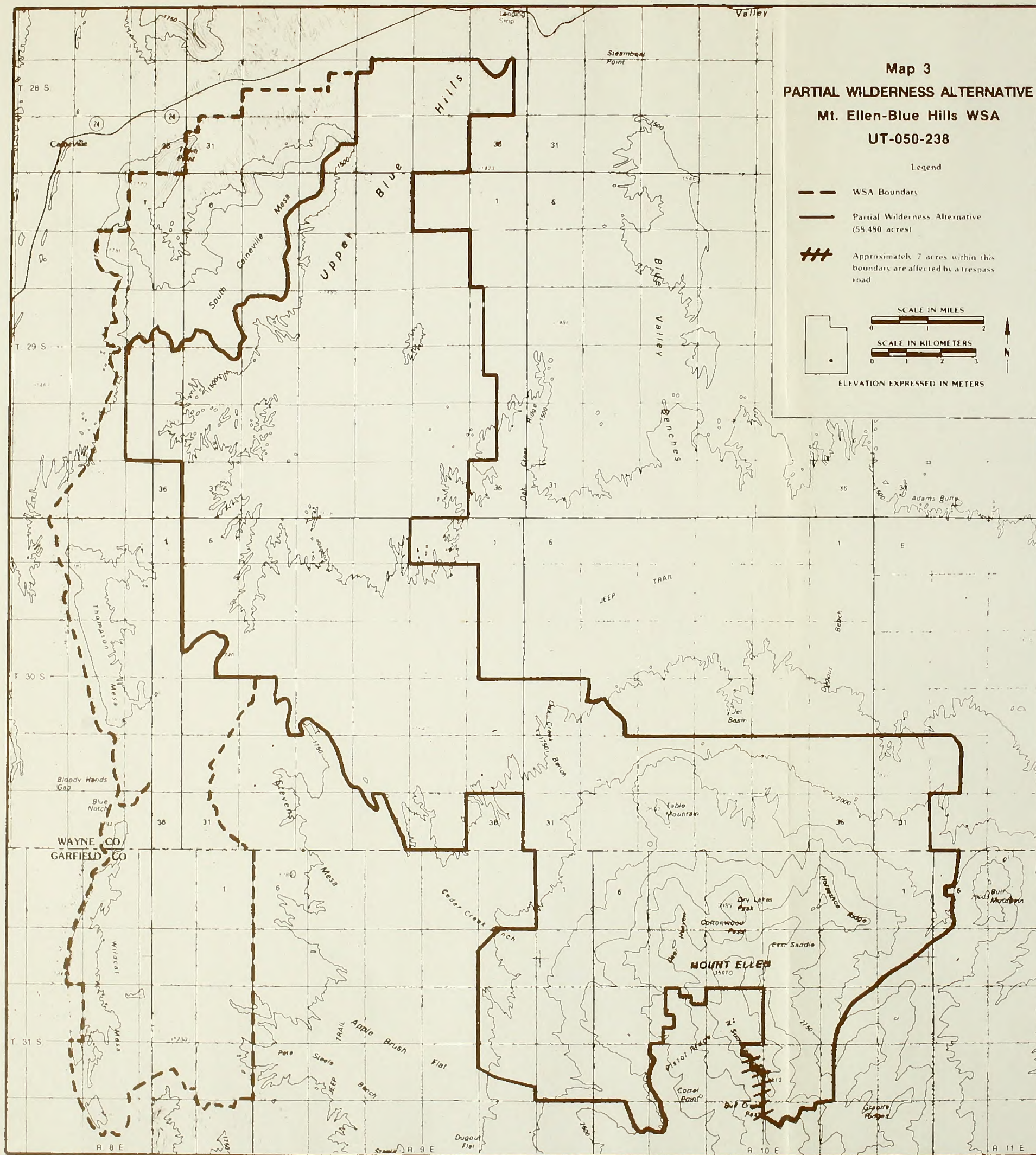
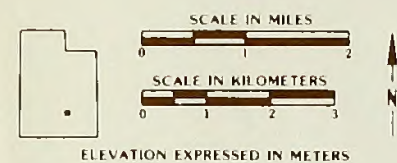
MT. ELLEN-BLUE HILLS WSA



MT. ELLEN-BLUE HILLS WSA

Map 3
PARTIAL WILDERNESS ALTERNATIVE
Mt. Ellen-Blue Hills WSA
UT-050-238

- Legend
- WSA Boundary
 - Partial Wilderness Alternative (58,480 acres)
 - /// Approximately 7 acres within this boundary are affected by a trespass road



with the current Henry Mountain MFP, as described for the No Action Alternative. The 58,480-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative. It might be necessary for Congress to modify the southern boundary of the wilderness area slightly because of a road that was inadvertently constructed in trespass. This alternative would likely involve Federal acquisition of seven sections (4,798 acres) of State land in-holdings by purchase or exchange. In addition, the State has requested exchange of six sections (3,394 acres) of adjacent State land that would be affected by wilderness designation (refer to Appendix 3). About three State sections adjacent to this alternative area likely would not be exchanged. Assumptions regarding analysis and impacts for State lands involved in the Partial Wilderness Alternative are the same as described for the All Wilderness Alternative. The figures and acreages for this alternative are for Federal lands only.

A summary of specific actions follows:

- The 58,480-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing (Category 4) and sale. In the 58,480-acre area, development work, extraction, and patenting would be allowed to continue on 3,200 acres of 155 existing mining claims provided that they are valid. The existing oil and gas leases covering the entire 58,480 acres would be phased out upon expiration, unless an oil or gas find in commercial quantities is shown. The 23,246-acre area not designated wilderness would be open to future mineral location, leasing, and sale. Development work, extraction, and patenting of 210 existing mining claims (7,200 acres) and future mining claims could occur in the 23,246-acre area if claims are valid. The area not designated would be managed as leasing Category 1 (standard stipulations) on 17,790 acres and Category 2 (standard and special stipulations) on 5,456 acres. Development of about 15,000 acres of existing oil and gas leases in this area could occur under existing stipulations. Development of future leases could occur in the undesignated area without concern for wilderness values.
- Domestic livestock grazing would continue to occur in the 58,480-acre wilderness area. The 2,060 AUMs in the 58,480-acre area would remain available to livestock as presently allotted. New rangeland facilities could be developed in the 58,480-acre wilderness only if necessary for protection and management of the rangeland and/or wilderness resource provided wilderness protection standards are met (refer to Appendix 1). None are proposed in this area. In the 23,246-acre nonwilderness area, grazing use would continue as authorized in the MFP (approximately 1,174 AUMs). New rangeland developments (one new reservoir and 1,000 acres of vegetation treatment) could be installed in this area without concern for wilderness values. An increase of about 200 AUMs of livestock forage could be achieved with the vegetation treatment in the undesignated area.
- In the 58,480-acre wilderness, new water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed only if compatible with wilderness, if needed to correct imminent hazards to life or property, or if authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the remaining 23,246-acre area, water resource facility developments would be allowed if in accordance with the MFP, without concern for wilderness values. No water projects are now planned in the Mt. Ellen-Blue Hills WSA, except for one livestock reservoir in the undesignated portion for the alternative.
- In the 58,480-acre wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. Planned wildlife developments in the 58,480-acre area include 1,850 acres of vegetation treatment in the Nasty Flat/Dry Lakes vicinity. It is assumed that the 1,850-acre vegetation manipulation would not be allowed. In the remaining 23,246-acre area, wildlife transplants or improvements would be allowed without concern for wilderness values, although none are currently proposed.
- The mountains and badlands that would comprise the 58,480-acre wilderness would be closed to ORV use. A short segment of one existing road, totaling 0.5 mile, would be "cherry-stemmed" and would provide vehicular access near Table Mountain. About 4 miles of existing ways and jeep trails would not be available for vehicular use except in situations described under the All Wilderness Alternative. All of the

23,246 acres not designated wilderness in the WSA would be open to ORV use. The 8.8 miles of ways and jeep trails in this area would be available for use, as well as 1.8 miles of road near Blue Notch.

- A specific Wilderness Management Plan would be developed that would govern use and protection of the 58,480-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trail-head parking. This border would be up to 100 feet from the edge of the road travel surface. It is assumed that the Wilderness Management Plan would not call for any change in the current military use of air space over the WSA.
- Harvest of forest products in the 58,480 acres of wilderness would not be allowed except for harvest of pine nuts or non-commercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining 23,246 acres would be open to woodland harvest, although none is specifically planned.
- Visual resources on the 58,480-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 23,246 acres would be managed as VRM Class II on 9,295 acres, Class III on 2,454 acres, and Class IV on 11,497 acres.
- Within the 58,480-acre wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that controls would be by hand or aerial methods. In the 23,246-acre nonwilderness area, measures of control would be taken without wilderness considerations.
- In the 23,246-acre nonwilderness area, any activity for the purpose of gathering information about natural resources would be allowed by permit. In the 58,480-acre wilderness, such activity would be allowed by permit, but would be limited to that conducted without use of motorized equipment

or construction of temporary or permanent structures, unless no other feasible alternatives exist.

- In the 23,246-acre area, hunting would be allowed subject to applicable State and Federal laws and regulations. In the 58,480-acre wilderness, such hunting would also be allowed, but use would be limited to nonmotorized means.
- In the 23,246-acre area, control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the 58,480-acre wilderness, control of predators would be allowed for the same objectives, but poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences that would result from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives

AFFECTED ENVIRONMENT

This section describes the resource values of the affected environment. Unless otherwise stated, information for this section is based on the Henry Mountain Planning Area Unit Resource Analysis and MFP (USDI, BLM, 1982c), other BLM documents, file material, and knowledge of BLM personnel.

Air Quality

The Mt. Ellen-Blue Hills WSA is designated a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act as amended. Nearby Class I areas are Capitol Reef National Park, 7 miles west of the WSA, and Canyonlands National Park, 32 miles east of the WSA. Air quality and visibility in the WSA are generally very good to excellent.

Visibility is an extremely important value to the Mt. Ellen-Blue Hills WSA. A panorama of dissected canyon country and mountain ranges unfolds in

MT. ELLEN-BLUE HILLS WSA

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
MT. ELLEN — BLUE HILLS WSA

Resource	Alternatives		
	No Action	All Wilderness (81,726 Acres)	Partial Wilderness Designation (58,480 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 19 million tons of coal, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper.	Oil, gas, and coal likely would not be recovered. Assuming a worst-case analysis, recovery of locatable minerals would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant in the foreseeable future. Coal resource foregone could be a long-term impact.	About 2 million barrels of oil and 13 billion cubic feet of gas could be foregone, along with up to 300,000 tons of coal and 29 percent of potential locatable minerals. Up to 18.7 million tons of mineable coal would remain available in the undesignated Wildcat Mesa area.
Wildlife	Less than 4 percent of the WSA would be affected by energy and mineral development. The proposed land treatment for wildlife habitat could provide AUMs for twice the current deer population and 50 percent more bison.	Wildlife would benefit from solitude. The proposed wildlife habitat land treatment would not be allowed and this would prevent planned population increases for deer and bison.	Impact to wildlife would be the same as with the All Wilderness Alternative.
Livestock	Grazing of 3,234 AUMs and maintenance of five spring developments, 6 reservoirs, 1 mile of pipeline, and 3.5 miles of fence would continue. New developments including 1 added reservoir for livestock could be constructed; proposed vegetative treatment for livestock could result in an increase of 200 AUMs.	Grazing of 3,234 AUMs and maintenance of existing developments would continue. Little effect on existing grazing management is expected; however, proposed new developments would be limited. The proposed 1 new reservoir and 1,000 acres of vegetation treatment would not be allowed and the related 200 AUM increase for livestock would not occur.	Livestock grazing would be the same as for the All Wilderness Alternative, except that the additional 200 AUMs could be obtained as all proposed livestock projects would be in the undesignated part of the WSA.
Visual Resources	The quality of visual resources could be impaired on up to 6,050 acres.	Visual quality could be impaired on up to 20 acres. About 63,307 acres of Class A scenery would be protected.	Visual quality could be impaired on up to 3,175 acres. About 54,620 acres of Class A scenery would be protected.
Recreation	ORV use at current low levels would continue on 12.8 miles of ways in the WSA that are currently open. Overall recreational use could increase from the present estimated 800 visitor days per year to 1,192 over the next 20 years. Up to 3,200 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 12.8 miles of way, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.	ORV use could continue on 8.8 miles of ways in the undesignated portion. The Mt. Ellen part of the WSA, most attractive for primitive recreation, would be protected and primitive use would increase.

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
MT. ELLEN — BLUE HILLS WSA

Resource	Alternatives		
	No Action	All Wilderness (81,726 Acres)	Partial Wilderness Designation (58,480 Acres)
Wilderness Values	Wilderness values could be lost on up to 6,050 acres (7.4 percent of the WSA), but the values in the rest of the WSA would not be affected.	Wilderness values would be protected, except on up to 20 acres (less than 1 percent of the WSA) which could be disturbed by development of valid mineral rights.	In the designated portion, wilderness values would be protected, except on 20 acres which could be disturbed by development of valid mineral rights. Additional impairment could be expected on 3,155 of the 23,246 acres not designated. Overall, wilderness values could be lost on 4 percent of the WSA. However, 97 percent of the area meeting the standards for solitude, 100 percent of the area meeting the standards for primitive recreation, and 73 percent of the area meeting the standards for naturalness would be in the designated portion and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be consistent with the <i>Wayne</i> and <i>Garfield County Master Plans</i> , State of Utah plans and policies, and the current BLM Henry Mountain MFP.	This alternative would not be consistent with the Wayne and Garfield Counties' concepts of multiple use. It would be consistent with State policy if lands were exchanged. Designation would constitute an amendment of the BLM Henry Mountain MFP.	The designated portion would relate to land use plans as noted for the All Wilderness Alternative and the undesignated 23,246 acres would be as for the No Action Alternative.
Socio-economics	Annual local sales of less than \$108,860 and Federal revenues of up to \$225,168 would continue. The 200 AUM increase could result in increase in livestock income and revenues totalling \$4,280.	Annual local sales of less than \$108,860 and Federal revenues of up to \$4,528 would continue, but Federal revenues of up to \$220,440 from oil and gas leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.	The effects of this alternative would be similar to those of the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$175,440 and the most likely coal development could take place. Future coal development could beneficially affect the economies of Wayne and Garfield Counties.

all directions from the summit of Mt. Ellen. These vistas are especially valuable because they are viewed from near the center of the area with the highest average visual range (70+ miles) in the United States (Environmental Protection Agency, 1979).

Geology

The Mt. Ellen-Blue Hills WSA is in the Canyonlands Section of the Colorado Plateau Physiographic Province. In general, this region is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

The Henry Mountains exhibit geological characteristics found in two other Utah mountain ranges, the Abajo and LaSal, as well as four other ranges in the Colorado Plateau, the Navajo and Carrizo Mountains in Arizona, and El Late Mountain and LaPlata Mountain in Colorado. All of these ranges are characterized by large volcanic laccoliths which gradually pushed through many layers of sedimentary rocks, deforming them in the process. Each of the ranges is essentially isolated and surrounded by low-lying deserts. The Henry Mountains are generally considered by geologists to be a prime example for the study of this phenomenon. As such, two of the peaks (Mt. Holmes and Mt. Ellsworth) in the Henry Mountains, but not in the Mt. Ellen-Blue Hills WSA, were designated a National Natural Landmark in 1975.

Elevations in the Mt. Ellen-Blue Hills WSA range from 4,600 to 11,615 feet. The WSA is characterized by two distinct topographic types. The Blue Hills portion consists of mesas and badland topography with drainages carved into the Mancos Formation; the Mt. Ellen portion consists of steep slopes and rounded peaks broken by large basins and wide canyons.

The Mancos Shale badlands along Sweetwater Creek are of major interest to the science of geomorphology. They have a history of scientific studies dating from 1875 to the present. This WSA's badlands have been described as "ever so much badder than Badlands National Monument" (Hunt, 1980).

South Caineville Mesa is a prominent feature in the northwest part of the WSA.

Mt. Ellen is the highest peak in the Henry Mountains, the last major explored and named mountain range in the continental United States. The higher elevations of Mt. Ellen offer outstanding vistas of the geology of central Utah. Table Mountain, on the north side of Mt. Ellen, is a prominent geologic feature.

Soils

Soils range from high mountain types (stoney and gravelly loams) on Mt. Ellen to the blue clay badlands on the desert at 4,800 feet. Lower elevations consist of desert shales, stony loams, sands, alkali flats, and rocky badlands. Slopes range from 2 percent to vertical cliffs. This WSA has some of the most severe erosion problems in the Henry Mountain Resource Area, primarily on the northern foothills of Mt. Ellen. Table 2 summarizes soil erosion in the WSA. Erosion condition was determined using soil surface factors.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	6,000	7	32,400
Critical	2.7	2,810	3	7,587
Moderate	1.3	29,760	37	38,688
Slight	0.6	35,086	43	21,052
Stable	0.3	4,090	5	1,227
Unclassified		3,980	5	-
Total		19,030	100	100,954

Sources: USDI, BLM, 1982c; Leifeste, 1978.

Vegetation

The northern part of the WSA consists of blue-hills badland terrain with little vegetation. On the remaining areas, the predominant vegetation on lower elevations is pinyon-juniper and saltbush. Higher up, vegetation includes ponderosa pine, Douglas fir, subalpine fir, aspen, and alpine grasslands. Existing vegetation types are summarized in Table 3.

TABLE 3
Existing Vegetation Types

Existing Vegetation Types	Acres	Percent of WSA
Shrubs, grasses, forbs	33,260	41
Rock outcrops, badlands	20,453	25
Pinyon, juniper	22,171	27
Aspen, conifer	4,680	6
Gambels' oak	1,162	1
Totals	81,726	100

Source: USDI, BLM, 1982c.

Bristlecone pine was discovered in the WSA in 1973. The Henry Mountains are now considered the southeast limit for the Great Basin variety of bristlecone pine.

The Mt. Ellen-Blue Hills WSA is in the Colorado Plateau Province Ecoregion as shown on the

Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the WSA are listed on Table 4. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

No threatened, endangered, or sensitive plant species have been identified in the WSA.

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Spruce-fir-Douglas fir forest	2,000	2
Arizona pine forest	7,172	9
Juniper-pinyon woodland	41,314	51
Saltbush-greasewood	31,240	38
Total	81,726	100

Source: USDI, Geological Survey, 1978.

Water Resources

The WSA contains the headwaters for several important streams, including Bull, Dugout, Oak, Birch, Sandy, and South Creeks. The WSA is the recharge recovery area for many springs in the deserts to the east and west. There are approximately 20 springs, two seeps, and 23 miles of perennial streams in the WSA. Spring water and headwater streams are generally of good quality, but surface water at lower elevations is of lesser quality. All are used by wildlife and livestock. The streams are used for irrigation except Oak Creek and Birch Creek. Birch Creek is proposed for irrigation use. Wayne County is investigating the feasibility of constructing a dam for irrigation storage and flood control purposes on the Fremont River to the north of the WSA, but specific location studies recently have determined that the proposed project would be outside of the WSA.

In the WSA there is little potential for wells or underground water use. Underground water sources are generally saline and not acceptable for human use.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is low to moderate, due to a marginally favorable geologic environment. An overall importance rating (OIR) of 2+ (SAI, 1982) to 3+ was assigned to the Mt. Ellen-Blue Hills WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider the reports prior to making final wilderness recommendations. All resources were assigned favorabilities of f2 or less, with the exception of the coal resource. Refer to Table 5 for a summary of the mineral and energy resource ratings.

TABLE 5
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas.
Uranium	f2	c4	Less than 500 tons of uranium oxide
Coal	f4	c4	Less than 163 million tons ³
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None
Gold	f2	c1	Less than 25 tons
Silver	f2	c1	Less than 500 tons
Copper	f2	c1	Less than 50,000 tons of contained copper

Source: SAI, 1984; USDI, BLM, 1982c.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

³Coal resource estimated by BLM as noted in the coal narrative.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in

time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common, and supplies currently exceed domestic demand. Silver would occur in only small amounts in the WSA.

LEASABLE MINERALS

There are no known deposits of any leasable minerals except coal in the WSA, nor are there any active drilling, mining, or exploration activities for leasable minerals.

Oil and Gas

Based on its geographic location and other data, the WSA is considered to have a low favorability (f2/c1) for oil and gas discovery with less than 10 million barrels of oil or less than 60 billion cubic feet of natural gas in-place. Of these amounts, less than 3 million barrels of oil or 18 billion cubic feet of natural gas would be recoverable. (Refer to Appendix 6 for recoverability estimates.) Any oil and gas present is likely to occur in small deposits in structural or stratigraphic traps.

The area is managed as BLM leasing Category 1 (standard stipulations) on 53,310 acres and Category 2 (standard and special stipulations) on about 28,416 acres. The WSA has oil and gas leases on 73,480 acres; approximately 12 percent (8,500 acres) of these leases are pre-FLPMA leases.

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b).

Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Between August and November of 1982, Exxon constructed approximately 4,000 feet (0.76 mile) of road and a 3.3-acre drill pad within the WSA and drilled an exploratory oil and gas well. The well did not produce oil or gas and has been plugged, and abandoned, and landscape reclamation is occurring.

Coal

Coal in the region is found in the Henry Mountains Coal Field. The Field has an estimated 230.9 million tons of minable coal and is comprised of three zones, described as follows (Doelling and Graham, 1972):

Emery Coal Zone (187.4 million short tons minable): this coal bed is present in the central part of the coal basin and represents the dominant part of the Henry Mountain Coal Field.

Ferron Coal Zone (42.0 million short tons minable): developed in Factory Butte, Swap Mesa, and Stanton Mine (southeast end of coal field) areas. Movable thickness occurs mostly in the Factory Butte area and a small area at the south end of the coal field.

Dakota Coal Zone (1.5 million short tons minable): usually thin or missing throughout the coal field. This coal bed thickens in small areas (.25 mile) and has been noted along North Caineville Reef, Waterpocket Fold, and around some of the peaks in the mountain range.

About 30 percent of the Henry Mountain Coal Field is within the western part of the WSA; however, much of this area is within the Ferron Coal Zone and is considered of insufficient thickness to have commercially minable coal. Although about 60 percent of the WSA overlaps the coal field, only about 8 percent of the WSA (Wildcat Mesa area) is in the Emery Coal Zone with potentially minable coal (seams 4 feet thick or more). An estimated 2,825 acres of the WSA in this latter area are considered suitable for surface or strip mining.

Based on total (measured, inferred, and potential) coal reserves of 542.5 million (USDI, Geological

Survey, 1979) for the entire Henry Mountain Coal Field, BLM has estimated that less than 163 million tons of coal may occur in the WSA; however, of this amount only 13 to 19 million tons are expected to be minable. About 10 percent of the Emery Coal Zone is in the WSA. Although estimates are based on limited exploration data, most other coal deposits in the WSA are believed to be thin and split into numerous small seams.

Coal prospecting permits and lease applications formerly existing in and adjacent to the WSA were relinquished. Presently no leases or coal-related activities occur in the WSA, and extraction of coal in the foreseeable future is not anticipated. In the long term the potential for coal mining is favorable, rated f4/c4 (SAI, 1982). In the past limited quantities of coal have been mined from three locations: Dugout Creek and Sweetwater Creek, about 1 to 5 miles south from the WSA, respectively, Factory Butte, about 10 miles north from the WSA.

Geothermal

The WSA is also in an area of low potential for geothermal resources. The geothermal favorability is rated at f1/c3 (SAI 1982), indicating that any geothermal resources in the WSA would have low heat flow and shallow gradient and are unlikely to be developed.

LOCATABLE MINERALS

There are no known deposits of locatable minerals in the WSA nor are there any current mining activities. There are approximately 360 pre-FLPMA claims covering 10,400 acres in the WSA, primarily for uranium.

There is a low favorability for uranium to occur in the western half of the WSA where the Salt Wash Member of the Morrison Formation is found. The favorability for the discovery of gold, silver, and copper is moderate. (Refer to Table 5 for ratings and estimated quantities.) The discovery of locatable minerals is considered low because extensive prospecting for these minerals since the 1890s has failed to find any significant deposits. Small, isolated deposits or deep deposits may be found in the future but these may or may not be of sufficient size or accessibility to be economically and commercially developed.

SALABLE MINERALS

With the exception of sand and gravel, there are no known or possible occurrences of salable minerals. Sand and gravel resources are associated with the aggregate material on Mt. Ellen. Any need for this material can be better met by other sources closer to demand centers.

Wildlife

Game animals in the WSA include mule deer, bison, pronghorn antelope, cougar, cottontail, chukar partridge, doves, and band-tailed pigeon. Many fur-bearers and other small mammals and birds inhabit the WSA. No wildlife transplants are planned for this WSA.

There are no habitat improvement facilities for wildlife in the WSA, although 1,850 acres in the Dry Lakes/Nasty Flat area have been planned for big game habitat improvement through vegetation manipulation. This would produce an estimated 245 AUMs for big game, primarily for bison and deer.

The WSA contains the identified big game ranges listed in Table 6. The current deer population on crucial summer range in the WSA is estimated as 113 animals. It is estimated that 52 bison use crucial summer and yearlong ranges in the WSA (USDI, BLM, 1983b). Overgrazing and competition for forage between big game and livestock is currently a problem on the summer ranges.

TABLE 6
Big Game Ranges

Range	Acres
Crucial deer winter	10,500
Crucial deer summer	9,500
Crucial bison summer	13,000
Crucial bison winter	600
Crucial bison yearlong	6,500

Source: USDI, BLM, 1982c.

There are no known threatened, endangered, or sensitive wildlife species inhabiting the WSA.

Forest Resources

There are approximately 17,230 acres of pinyon-juniper open to harvest of fenceposts and firewood. Demand for this resource has been minimal (i.e., under 60 cords and 200 posts per year).

More than half of the 1,565 acres of aspen in the WSA is located on slopes exceeding 40 percent and, therefore, is noncommercial. Most of the other aspen currently is inaccessible. About 70 percent of the 750 acres of Douglas fir also is on steep slopes and economically unrecoverable.

A potentially commercial ponderosa pine area is found in Sawmill Basin; however, volumes are low. Because this area also has wildlife, scenic,

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and recreation values and timber demand is low, the existing MFP does not allow for commercial harvests in Sawmill Basin.

Livestock and Wild Horses/Burros

Portions of seven allotments used by 30 operators involving both cattle and sheep are permitted for an estimated 3,234 AUMs in the WSA. This represents 20 percent of the total AUMs in the seven allotments involved. Livestock information is summarized in Table 7. Virtually all livestock herding and roundup is accomplished by horseback.

The WSA has five spring developments, six reservoirs, 1 mile of pipeline, and 3.5 miles of fence. One new livestock reservoir and 1,000 acres of vegetation treatments (Thompson Mesa) currently are planned for livestock use. The planned vegetation treatment is expected to add about 200 AUMS for livestock in the Steele Butte Allotment.

There are no wild horses or burros inhabiting this WSA.

Visual Resources

This WSA has three visually distinctive areas: Blue Hills, Mt. Ellen, and the mesas along the western border. The Blue Hills are Mancos Shale badlands with barren, sharply eroded ridges of blue-gray color in the northeast part of the WSA. The southeast part of the WSA consists of foothills and the main peak of Mt. Ellen. Scenic values are exceptional in both sections.

The Mt. Ellen-Blue Hills WSA is visible from Highways U-24 and U-95 and from the Sawmill Basin road (a secondary travel route in the Henry

Mountains). The three mesas (South Cainville Mesa, Thompson Mesa, and Wildcat Mesa) are steep-sided and flat-topped formations typical of the general region.

The BLM Visual Resource Evaluation System's rating for the WSA is shown in Table 8 and the BLM VRM system is explained in Appendix 7.

TABLE 8
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	63,307	77
Class B	18,419	23
Class C	0	0
Total	81,726	100
Management Class		
Class I	0	0
Class II	63,935	78
Class III	2,454	3
Class IV	15,337	19
Total	81,726	100

Source: USDI, BLM, 1982c.

Cultural Resources

There are seven archaeological sites (campsites and chipping sites) recorded in the Mt. Ellen portion of the WSA. This area has a moderate to high potential for the discovery of additional sites. There are no sites recorded in the Blue Hills portion of the WSA, and it is thought to have a low potential for the discovery of additional sites. On the west side of the WSA, including South Caineville and Thompson Mesas, are 29 known sites

TABLE 7
Livestock Grazing Use Data

Allotment	Permittees	Period of Use	Acres in WSA	Percent of Allotment Area in WSA	Estimated Available Livestock Forage in WSA	Percent of Total Livestock Forage in WSA
Blue Bench	7	11/01 to 05/31	46,600	52	2,288	50
South Caineville ¹ Mesa	0	0	3,805	100	0	0
Dry Lakes ¹	0	0	9,146	96	0	0
Sawmill Basin	2	06/16 to 08/31	3,421	37	100	60
Nasty Flat	3	06/01 to 09/30	3,740	27	103	22
Hanksville	8	11/01 to 05/31	2,393	3	19	1
Steele Butte	10	10/16 to 05/31	12,621	17	724	14

Source: USDI, BLM, 1982c.

¹Allotment currently not used for livestock grazing.

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(mostly campsites and lithic scatters).

There are no sites in the WSA listed on the National Register of Historic Places. One historic site on South Caineville Mesa is a stone cabin, which is being nominated for National Register listing. No other known sites in the WSA are potentially eligible for listing on the National Register. However, the Bull Creek Archaeological District (which is on the National Register) is located immediately north of the WSA; there are 113 recorded sites in the District.

Recreation

Fifteen recreational opportunities were evaluated for their quality in this WSA. Fourteen opportunities are present in varying degrees. Eight activities (dayhiking, nature study, wildlife observation, geologic sightseeing, general sightseeing, backpacking, camping, and photography) are considered of high quality in part of the WSA. A summary of selected recreational activities follows.

Dayhiking opportunities are outstanding in the southeast part of the WSA because the area has very good access and several trails. A 3-mile trail leads from Bull Creek Pass to the summit of Mt. Ellen; this trail is rapidly increasing in popularity and is frequently used by organized groups. Since Mt. Ellen is the highest peak in the Henry Mountains, superb vistas of numerous geologic features of central Utah are possible. Another trail ascends the mountain from the Lonesome Beaver Campground via Log Flat. This alternate route is often passable when the road to Bull Creek Pass is blocked by snowdrifts.

Extended backpacking trips of several days' length are possible via the Sweetwater Creek drainage or around the lower elevations of Mt. Ellen. Hiking routes total approximately 60 miles.

There is limited recreational use of ORVs on the 12.8 miles of way in the WSA, mainly in connection with hunting access. Approximately 35,000 acres of the Blue Hills area could be closed to ORV use in accordance with the Henry Mountain Planning Area MFP. The remaining 46,726 acres, including all 12.8 miles of existing vehicular ways, would be open to ORV use according to the MFP.

Because of the wide variety in elevation, vegetation, and the presence of deer and bison range, this WSA has good opportunities for hunting and excellent opportunities for wildlife observation. Bison are frequently observed grazing on the alpine grasslands in mid-summer.

Nature study opportunities are outstanding because of the presence of four biological life

zones (Upper Sonoran, Transition, Canadian, and Hudsonian) in a relatively small area.

Visitor use in the WSA is estimated at less than 200 visitor days per year for all activities except hunting. No hunting use figures are available for the WSA alone. However, the WSA contributes to the following annual hunting use in the entire Henry Mountain area: 175 visitor days, bison; 342 visitor days, deer; and 1,106 visitor days, upland game. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980.

On the basis of the above information, BLM estimates that overall recreation use in the WSA averages about 800 visitor days per year.

Wilderness Values

SIZE

This WSA is 81,726 acres in size. It is about 19 miles long (north to south) and about 16 miles wide at its widest point. Immediately adjacent to the east is the Bull Mountain WSA which has an additional 11,800 acres. The graded Sawmill Basin Road, a secondary travel route in the Henry Mountains, separates the two WSAs.

NATURALNESS

Most of the WSA is in a completely natural condition. Imprints of man include 12.8 miles of ways, 2.5 miles of fence, and six livestock reservoirs. In August 1982, approximately 4,000 linear feet of an existing way were upgraded and approximately 3.2 acres cleared for an oil and gas exploratory drilling operation. The well did not produce and the drill rig was removed and all disturbed acreage rehabilitated in March 1983.

A road along the North Summit Ridge on the southern boundary of the WSA was constructed in the fall of 1983 by the Tercero Corporation and was intended to be constructed entirely on private lands owned by them and the Durfey families. After the road had been centerline staked and constructed, a final survey was ordered by the private landowners. It was discovered, at that time, that the road had inadvertently trespassed on BLM lands. BLM specialists made an on-the-ground review and determined that the construction of the road actually crossed over the boundary line of the Mt. Ellen-Blue Hills WSA in four locations and disturbed naturalness on less than 2 acres. The road also cut off less than 5 WSA acres from the main WSA. The Tercero Corporation has offered to make restitution by any means the BLM deems necessary to be in compliance with the intent of BLM's *Interim Management*

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Policy (USDI, BLM, 1979) and to make necessary corrections to minimize the construction impacts in the area. BLM specialists believe it would be very difficult to completely restore naturalness due to nature of the hillside on which the road is located.

In the WSA as a whole, 80,283 acres are judged to meet the naturalness standard set by the *Wilderness Act* and 1,443 acres do not meet the standard.

SOLITUDE

Opportunities for solitude (i.e., a secluded spot away from others) in the WSA are influenced by size, topography, vegetation, and absence of distracting sights and sounds. The WSA's size (81,726 acres) allows for recreationists to find solitude in much of the area. About 75 percent (60,000 acres) of the Mt. Ellen-Blue Hills WSA displays outstanding opportunities for solitude in much of the area.

Mt. Ellen proper has several large basins and ridges such as Horseshoe Basin, Dry Lakes, and Deer Haven that provide separation and screening. Vegetation on Mt. Ellen also contributes to opportunities for solitude. Depending on elevation, pinyon-juniper, aspen, ponderosa pine, and Douglas fir provide excellent screening. Mt. Ellen is the highest peak in the Henry Mountains and offers excellent vistas of central Utah from the summit. Few, if any, signs of human activity are to be seen or heard, further contributing to one's feeling of solitude. The Blue Hills region of the WSA is an extensive network of badlands and ridges that provides excellent topographic screening but no vegetation screening.

In the western part of the WSA the countryside is sparsely vegetated, open, and relatively flat in numerous locations; therefore, opportunities for solitude in this area are judged to be less than outstanding.

PRIMITIVE AND UNCONFINED RECREATION

About 45 percent (about 37,000 acres) of the WSA displays outstanding opportunities for high quality primitive, unconfined recreation. These high quality opportunities are located primarily in the southeast part of the WSA. Opportunities for primitive, unconfined recreation exist in the other 55 percent (about 44,726 acres) but are considered of relatively low quality and less than outstanding for recreation use due to the barren and/or somewhat flat nature of the terrain.

Opportunities for primitive, unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the number of recreational opportunities present, and an evaluation of the quality of these opportunities.

As discussed in the Recreation section, the WSA has a diversity of recreational opportunities with 14 present in varying degrees. Eight of these activities are above average or excellent in quality in part of the WSA. They include backpacking, camping, dayhiking, nature study, photography, geological and general sightseeing, and wildlife observation.

SPECIAL FEATURES

This WSA contains an outstanding selection of special features, all of which have been previously noted. They include those of a geological, scientific, educational, scenic, botanical, ecological, and zoological interest, as briefly summarized here.

Mt. Ellen is the highest peak in the Henry Mountains, the last named and explored major mountain range in the continental U.S. The higher elevations of Mt. Ellen offer outstanding vistas of the geology of central Utah and the entire Water-pocket Fold.

Portions of Mt. Ellen serve as a summer range for the free-roaming Henry Mountain bison herd. The isolated, rugged terrain also serves as habitat for deer and mountain lion.

Bristlecone pine was discovered in the WSA in 1973; the Henry Mountains are considered the southeast limit for the Great Basin variety of bristlecone pine in the U.S.

Of scientific and ecologic interest are the four distinct life zones found in this WSA—the Upper Sonoran, Transition, Canadian, and Hudsonian Life Zones.

Mancos Shale badlands at the lower elevations contain fossilized shark teeth. The badlands are also of interest to the science of geomorphology; this area has a history of scientific research dating from 1875 to the present.

Land Use Plans and Controls

This WSA is in Wayne and Garfield Counties. The *Final Report, Wayne County Master Planning Project* (Call Engineering, Inc., 1976) covers the northern part of this WSA. The Plan does not identify recommendations at specific locations. The Plan recognizes that "... outstanding natural landmarks should be preserved as much as possible." However, it also states: "Open spaces should be used for many purposes rather than strictly as wilderness areas."

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers the southern part of this WSA. The Master Plan recognizes that the county possesses "... some

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of the most spectacular scenery in the United States . . . is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs be recommended for wilderness. The plan recommends that the remaining lands within the county, including the Mt. Ellen-Blue Hills WSA, be retained for multiple uses. According to the plan, multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The WSA is managed under provisions of the BLM Henry Mountain Planning Area MFP (USDI, BLM, 1982c) which generally allows for multiple use as described in the No Action Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

There are 11 State sections inside the WSA and an additional 10 State sections adjacent to it. The management philosophy for this State land is to maximize economic returns for the State School Fund. No development activities are currently occurring on these sections, although they are under lease for oil, gas, and grazing.

There are no private in-holdings, private subsurface rights, or rights-of-way within the WSA.

Socioeconomics

DEMOGRAPHICS

The WSA is within Wayne and Garfield Counties, two of Utah's least populated and most rural counties. In 1980, the Wayne County population was 1,911 reflecting a population density of 0.77 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1983, and University of Utah, Bureau of Economic and Business Research, 1979). In 1980, the Garfield County population was 3,673, reflecting a population density of 0.71 persons per square mile (USDC, Bureau of the Census, 1983, and University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Hanksville, a small community of approximately 351 people, located about 13 road miles to the west.

EMPLOYMENT

Wayne and Garfield Counties are among the counties with the lowest average personal income in the State of Utah (South et al., 1983). Government employment represents the largest employment sector within Wayne County with agriculture a close second. Nonfarm proprietors

represent the third largest sector of Wayne County employment (refer to Table 9). Wayne County has some tourism and lumber activities; however, the principal commercial center for this region is Richfield, Utah, located to the west in Sevier County (South et al., 1983). Green River, about 78 road miles north of the WSA in Emery County, is a main gateway and service area for visitors to the Mt. Ellen area.

Garfield County serves as the southern (and secondary) gateway to the WSA. Government is the largest employment sector within the county, followed by construction, services, manufacturing, and agriculture. The county, however, maintains a diversified economic base (South et al., 1983). The Town of Escalante relies on farming, stockraising, and lumbering, supplemented by tourism, some oil production, and government employment (South et al., 1983). Another town, Boulder, continues to rely on agriculture.

TABLE 9
1980 Employment
Wayne and Garfield Counties, Utah

Industrial Sector	Wayne County		Garfield County	
	Number	Percent	Number	Percent
Agriculture	191	25	236	11
Mining	9	1	210	10
Construction	84	11	379	17
Manufacturing	37	5	248	11
Transportation, Communication, and Utilities	3	--	85	4
Wholesale and Retail Trade	42	5	125	6
Finance, Insurance, and Real Estate	12	2	16	1
Services	31	4	266	12
Government	207	27	457	21
Nonfarm Proprietors	152	20	157	7
Total	768	100	2,179	100

Sources: Utah Department of Employment Security, 1980; USDC, Bureau of Economic Analysis, 1982.

INCOME AND REVENUES

In 1980, the nonfarm industry sector in Wayne County produced nearly 89 percent or \$7.3 million of total labor and proprietors' income within the county. This represented an annual growth rate of 17.4 percent between 1975 and 1980, and higher than the 13.9-percent growth rate experienced by the State (refer to Table 10). Within this total income, the private sector produced, mainly from mining and construction, about 63.9 percent of these earnings and the government sector produced about 25 percent. Farm labor and proprietors' income totaled \$0.9 million or 11.1 percent of total personal earnings (University of

TABLE 10
1980
Personal Income and Earnings
Wayne and Garfield Counties, Utah

Type/Source	Wayne County			Garfield County		
	Earnings Income (in \$1,000)	Components as Percent of Totals	Annual Growth Rate 1975-80 (Percent)	Earnings Income (in \$1,000)	Components as Percent of Totals	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietors' Income (Earnings)	8,245	100.0	17.5	24,792	100.00	21.9
Total Labor and Proprietors' Income by Industry Source						
Farm	917	¹ 11.1	17.8	949	¹ 3.8	16.6
Nonfarm	7,328	¹ 88.9	17.4	23,843	¹ 96.2	22.2
Private	5,268	² 71.9	22.7	19,049	² 79.9	26.5
Agriculture	81	³ 1.1	(D)	79	³ 0.3	(D)
Service and Other Mining	(D)	³ (D)	(D)	4,222	³ 17.7	47.0
Construction	(D)	³ (D)	(D)	5,536	³ 23.2	66.5
Manufacturing	291	³ 3.9	4.1	3,294	³ 13.8	14.2
Transportation and Public Utilities	183	³ 2.5	0.9	1,545	³ 6.5	16.8
Wholesale Trade	69	³ 0.9	1.8	96	³ 0.4	1.3
Retail Trade	496	³ 6.8	3.4	1,302	³ 5.5	7.6
Finance, Insurance and Real Estate	(D)	(D)	(D)	189	³ 0.8	(D)
Services	416	³ 5.7	11.1	2,786	³ 11.7	16.3
Government	2,060	² 28.1	8.2	4,794	² 20.1	10.8

Sources: USDC, Bureau of Economic Analysis, 1982; University of Utah, Bureau of Economic and Business Research, 1982.

¹Earning components as a percent of total earnings; totals do not equal 100.

²Earning components as a percent of total earnings for nonfarm sector.

³Earning components as a percent of incremental earnings within private sector.

(D) Not shown to avoid disclosure of confidential information or for items \$50,000 or less. Data are included to totals.

Utah, Bureau of Economic and Business Research, 1982).

In Garfield County, the nonfarm industry sector in 1980 produced over 96 percent of total labor and proprietors' income representing an annual growth rate of approximately 22 percent (University of Utah, Bureau of Economic and Business Research, 1982) (refer to Table 10). Almost 77 percent of this income came from the private sector, principally mining, construction, and manufacturing, while government sources produced approximately 20 percent of personal income and earnings for the county. Farming produced 3.8 percent of the county's total personal income, amounting to \$949,000.

Economic-related activities in the WSA include mineral exploration, livestock production, woodland production, and recreation. Table 11 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

The WSA has 360 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

The geophysical exploration that has been conducted in the WSA has generated some temporary local employment and income.

One oil and gas well has been drilled in the WSA. This drilling generated an estimated 1.5 work years of employment some of which represent local employment. However, no oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Thirty livestock operators have a total grazing privilege of 3,234 AUMs within the WSA. If all forage in the WSA were utilized, it would account for \$64,680 of livestock sales, including \$16,170 of ranchers' returns to labor and investment.

TABLE 11
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	Unknown ¹	\$220,440
Mining Claims	Less than \$36,000	None
Livestock Grazing	\$64,680	Up to \$4,528
Woodland Products	\$4,900	\$200
Recreational Use	Less than \$3,280	Unknown ²
Total	Less than \$108,860	Up to \$225,168

Sources: BLM File Data; Appendix 9.

¹Some local employment for exploration work.

²A few commercial permits have been issued since 1980.

Some woodland products are harvested from the WSA; however, the harvests have been small (approximately 60 cords of firewood and 200 posts per year) and would be worth only about \$4,900. This is insignificant to the local economy and only of minor significance to those involved in the harvest. Most firewood harvest is for personal use rather than for sale to others.

The WSA's recreational use is low. Related local expenditures are low and insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for the area, including the Mt. Ellen-Blue Hills WSA, is estimated as about 800 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Wayne and Garfield Counties.

The WSA generates Federal revenues from mineral leases, livestock, and woodland products (refer to Table 11).

Oil and gas leases in the WSA cover 73,480 acres. At \$3 per acre, lease rental fees generate up to \$220,440 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates them to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 3,234 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$4,528 of grazing fee revenues

annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

Harvest of fuelwood and posts from the WSA could generate an estimated \$200 of Federal revenues annually.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources (except coal) are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). Information for coal is based on BLM estimates. These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and, then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the SAI methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas and locatable mineral exploration and development and vegetation treatments for wildlife and livestock. The area would be open to resource use and development without controls for wilderness protection, and could include construction of new access roads. The degree of future development is unknown but would probably be relatively low due to the WSA's rough terrain and limited resource potential. The following is a worst-case analysis based on the assumptions that minerals would be developed sometime in the future and cause the following disturbance: oil and gas, 160 acres; coal, 3,000 acres (2,825-acre mine plus 175-acre access and support features); and copper, gold and silver and other locatable minerals, 40 acres. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) In addition, 2,850 acres could be disturbed by vegetation manipulation to improve wildlife habitat and livestock forage. Altogether this disturbance would total 6,050 acres.

AIR QUALITY

The WSA would continue to be managed as a PSD Class II area. The close proximity of Capitol Reef National Park (7 miles to the west) may require any major developers in the WSA to meet standards more strict than Class II. Disturbance of up to 3,200 acres by mineral activities (particularly surface mining of coal) would result in increases in fugitive dust emissions. If chained and seeded, the 2,850-acre vegetation manipulation also would result in short-term increases in fugitive dust emissions.

GEOLOGY

Surface mining of coal would modify the geologic conditions on 2,825 acres. This would not detract from any geologic features of educational or scientific interest. No additional impacts to geology are expected because disturbances associated with locatable minerals (i.e., gold, silver, and copper), oil and gas exploration and development, coal mine support facilities, and vegetation manipulation would be mostly surface-disturbing activities not affecting the geologic structure of the area.

SOILS

It is estimated that up to 3,200 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas in critical erosion class (worst-case analysis) and that erosion condition would in-

crease one class, soil loss on the 3,200 acres would increase from 8,640 cubic yards/year to 17,280 cubic yards/year. Soil loss would decrease as reclamation occurred. The time required, however, for complete reclamation could vary from 5 to 40 years depending on restoration methods and seasonal conditions.

Therefore, with this alternative, maximum annual soil loss related to mineral exploration and development in the WSA would increase by approximately 8,640 cubic yards (approximately 9 percent) over current annual soil loss to approximately 109,594 cubic yards/year until reclamation was complete. The length of time required for complete reclamation is unknown.

The 2,850-acre vegetation manipulation would be designed to improve ground cover and soil conditions. Ground cover would be disturbed during the early implementation stages (1 to 2 years). Within 3 years, ground cover would be expected to equal or exceed cover prior to treatment (USDI, BLM, 1983b). Because this and other vegetation manipulation and erosion control projects would be allowed with this alternative, there would be the potential to control future erosion problems within the WSA should the need arise.

VEGETATION

Because the maximum anticipated disturbance due to mineral and energy development would be no more than 3,200 acres total (4 percent of the WSA) changes in the WSA's vegetation types would not be significant. About 2,850 acres of pinyon-juniper vegetation would be altered by vegetation manipulation but, in the long term, would gradually revert to the original type unless the area was treated again (USDI, BLM, 1983b). Therefore, overall impacts to vegetation would not be significant with this alternative.

There would be no impact to threatened, endangered, or sensitive plant species since none are known to exist in the Mt. Ellen-Blue Hills WSA.

WATER RESOURCES

Because control measures would be required during mining operations, no significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 8,640 cubic yard increase of annual soil loss from surface disturbance related to mineral development. The planned 2,850-acre vegetation manipulation projects would be expected to enhance watershed conditions when the seeded species become established. Water development for livestock (one reservoir now proposed) could be carried out, and future projects for use of the WSA's water

(e.g., Birch Creek) for irrigation on lands outside the WSA could be further considered if and when proposed by local interests.

Except for possible surface mining of coal on 2825 acres, mineral exploration and development in the area would generally be confined at or near the surface or with widely spaced wells and would not significantly alter ground water quality and quantity. Surface mining of 2,825 acres of coal could result in small increases in polluted runoff, but this would be regulated by mine plan provisions and by the State of Utah through required discharge permits.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place or up to 60 billion cubic feet of natural gas (in-place) exists in the WSA, with 3 million barrels of oil or 18 billion cubic feet of gas assumed to be potentially recoverable (refer to Appendix 6 for estimates of recoverability). These oil and gas resources could be explored and developed, subject to Category 1 (standard stipulations) on about 53,310 acres and Category 2 (standard and special stipulations) on about 28,416 acres. These categories would have no effect on the operator's ability to explore and develop the area.

Approximately 160 acres of surface disturbance is assumed to take place if exploration and development were to occur. Due to the small size of anticipated deposits and the negative results of exploration to date, oil and gas production is not considered likely in the WSA, even without wilderness designation.

Coal

With this alternative the opportunity would exist to recover up to an estimated 19 million tons of coal from within the WSA. This recovery would likely be concentrated on Wildcat Mesa where surface mining could occur. Such recovery is not expected to occur in the near future due to market conditions and availability of existing mines in central Utah; however, the coal in the Wildcat Mesa part of the WSA may be mined in the long term. Coal in other portions of the WSA is unlikely to be recovered even if leased because most of those deposits are believed to be relatively thin and split into small seams.

Locatable Minerals

The entire WSA would remain open to mining claim location. Of the assumed potential deposits

of locatable minerals, up to 50,000 tons of copper, 25 tons of gold, and 500 tons of silver may be located and developed in the future under this alternative. Approximately 40 acres could be disturbed due to mining claim access roads, exploration, and development of these locatable mineral resources. Employment of unnecessary or undue degradation stipulations would not significantly affect a claimant's ability to extract minerals in the area. However, the likelihood of development is thought to be low because sizeable ore bodies are not known to exist in the WSA and economic considerations (e.g., depth, transportation, processing, etc.) may limit feasibility if only small scattered deposits are found.

WILDLIFE

With this alternative, about 20,000 acres of crucial deer range and about 20,100 acres of crucial bison range would be managed on a multiple-use basis. As much as 200 acres of crucial mule deer and bison range could be subject to surface-disturbing activities associated with oil and gas or locatable mineral exploration and development. This acreage represents approximately 1 percent of the total crucial deer and bison range within the WSA. About 1,850 acres of proposed land treatments, providing a potential 245-AUM net gain in wildlife forage production, could be undertaken with this alternative. These projects would not only provide additional forage (especially high quality forbs) but would also help reduce grazing pressure and forage competition on crucial deer summer range.

The current deer population on crucial summer range within the WSA is estimated at 113 animals (USDI, BLM, 1983b). Based on the assumption that deer are evenly distributed throughout this range and that surface disturbance would occur on this area, the loss of 200 acres from surface disturbance associated with potential mineral development could reduce the carrying capacity for the deer population by about two animals within the WSA. However, if all the projected 245-AUM increased production from land treatments on crucial summer range within the WSA were used by deer, enough forage would be produced to support an additional 222 deer on this range.

The current number of bison utilizing the area within the WSA is estimated at 52 animals. This includes animals using crucial summer and year-long ranges (USDI, BLM, 1983b). Based on the assumption that bison are evenly distributed throughout this range and that all surface disturbance would occur on this area, the loss of 200 acres from surface disturbance could reduce the carrying capacity for bison by one animal within

the WSA. However, if all the 245-AUM increased production from land treatments on crucial bison summer and yearlong ranges were used by bison, enough forage would be produced to support an additional 26 bison on these ranges. The potential 3,000 acres associated with coal on Wildcat Mesa are not within the crucial ranges.

With this alternative, both bison and deer numbers are expected to increase in the long term because possible habitat loss from surface-disturbing activities would be more than compensated for by increased range quality from land treatments. The actual balance of use that would result between livestock, deer, and bison is unknown.

There would be no impact to threatened, endangered, or sensitive wildlife species with this alternative.

FOREST RESOURCES

With the No Action (No Wilderness) Alternative, approximately 16,950 acres of pinyon-juniper would be open to harvest of fenceposts and firewood, with access by ORV. However, demand is anticipated to remain low (i.e., about 60 cords and 200 posts per year). There would be no opportunity for commercial harvest of wood products due to the inaccessibility of the Douglas fir for harvest and because the Sawmill Basin area would continue to be closed to wood product harvest under the Henry Mountain MFP. Therefore, the No Action Alternative would not result in any significant increase in harvest or loss of forest resources in the WSA.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 3,234 AUMs currently allocated in portions of five allotments in the WSA are used by cattle and sheep by 30 livestock permittees. This use would continue and could increase to about 3,434 AUMs as a result of the planned 1,000-acre vegetation treatment for livestock forage. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA and no range improvements (other than the vegetation treatment and one reservoir) are planned for livestock, few, if any, changes in livestock management techniques are expected. The potential disturbance of 200 acres from oil and gas and locatable mineral development could result in short-term losses of livestock forage. The potential 3,000 acres used for coal mining would result in loss of livestock use during the period of mining opera-

tions; however, due to reclamation forage would equal or exceed the current amount in the long-term.

Overall, livestock grazing would improve with this alternative.

VISUAL RESOURCES

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 3,200 acres of surface disturbance from mineral and energy exploration and development and 2,850 acres of vegetation manipulation would be altered. Therefore, VRM Class II management objectives would probably not be met during the short term. Even after rehabilitation, some permanent localized impacts would be expected. If roads, vehicular ways, and drill pads are located throughout the area for energy and mineral exploration and development (worst-case analysis) visual quality in the WSA could be significantly reduced. The probability of extensive energy and mineral exploration and development is low, except for potential future coal mining on Wildcat Mesa. VRM Class II management objectives would probably not be met on the 2,850 acres of vegetation manipulation, at least during the period of treatment. This intrusion would probably be visible and not meet VRM Class II management objectives until the treated area returned to natural (or natural-appearing) vegetation. The intrusion could be considered permanent if the manipulated area were regularly cleared of tree growth. This intrusion would affect visual resources on about 3 percent of the WSA.

This alternative would not result in significant visual impacts to the overall scenic qualities of the WSA.

CULTURAL RESOURCES

Disturbance of 3,200 acres by mineral exploration and development, and as much as 2,850 acres from the planned vegetative manipulation with this alternative could inadvertently disturb or destroy unknown sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would lessen the chance of this happening.

Overall, there would be little effect on cultural resources due to the relatively low amount of cultural resources in the area and to mitigating measures that would be taken prior to surface-disturbing activities. Vandalism (not currently a problem in the WSA) would be expected to increase in proportion to the general population increase in the region.

RECREATION

Primitive recreational opportunities would be diminished on up to 3,200 acres disturbed by mineral and energy activities and 2,850 acres disturbed by a planned vegetation manipulation. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for mineral exploration and development would improve access into the area for nonprimitive recreation. Access for hunting could be improved by roads constructed as part of mineral development. About 12.8 miles of way would remain open to ORV use although they are presently used little for recreational ORV travel, except for hunter access.

The vegetation manipulation would have short- and long-term impacts on sightseeing and primitive recreation because of the effects on scenic and primitive values. However, the vegetation manipulation would improve big game habitat and would improve the opportunity for zoological sightseeing and hunting (USDI, BLM, 1983b).

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from about 800 current visitor days per year to 1,192 visitor days at the end of 20 years.

WILDERNESS VALUES

Since no wilderness would be designated, the identified wilderness values in various parts of the WSA would not receive the degree of protection afforded by wilderness designation. The mineral and energy related surface disturbance could result in a significant loss of naturalness, solitude, and outstanding opportunities for primitive and unconfined recreation where these values exist in the WSA if roads, vehicular ways, and drill pads are located throughout the area. The mineral potential of the WSA is low except for coal in the area of Wildcat Mesa. If mineral development occurred, up to 3,200 acres could be impacted. Wilderness values on an additional 2,850 acres would be adversely affected by planned vegetation manipulation projects. Altogether, as much as 6,050 acres in the WSA could lose their naturalness and opportunities for solitude and recreation. The loss of wilderness values on the 2,825 acres that

could be surface mined for coal would be considered irretrievable, even with reclamation of the area.

LAND USE PLANS AND CONTROLS

The plans dealing with the area encompassed in the WSA are the *Wayne and Garfield County Master Plans* and the BLM Henry Mountain MFP. This alternative would not change the present or expected use of the lands in the WSA and would be consistent with the multiple-use concept of those plans. This alternative would also be consistent with the management philosophy of the State of Utah which emphasizes economic return from State school sections.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the potential oil and gas, coal, and locatable minerals in the WSA were developed it would lead to increases in employment and income for Wayne and Garfield Counties. However, the probability of economic development of minerals within the WSA is low, except for coal at Wildcat Mesa which has a moderate to high potential in the long term (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (up to 3,234 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. With the planned vegetation manipulation an increase of 200 AUMs resulting in an increase of \$4,000 in livestock sales, including about \$1,000 in ranchers' income, could be expected.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase only about 392 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) increased recreation-related expenditures of \$1,607 attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. The entire 81,726 acres in the WSA would be open to oil and gas leases. Existing leases would continue to bring up to \$220,440 of

Federal lease fee revenues per year. New leases on 8,246 acres could provide an additional \$24,738 in revenue. In addition, royalties from lease production could result if oil and gas were discovered. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (up to \$4,528 per year) would continue and could increase by \$280 as a result of increased forage from vegetation treatment. About 50 percent of the grazing revenues would be returned to the local BLM office for use in range improvement projects. The WSA could be used for harvest of fuelwood and posts. At current demand this would bring about \$200 in fees to the Federal Treasury.

All Wilderness Alternative (81,726 Acres)

As cited in the Description of the Alternatives section, the major changes that could occur in the 81,726-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 12.8 miles of existing vehicular ways in the WSA would be closed to vehicular use, except for approval by BLM as noted in the Description of the Alternatives section. The WSA would be managed under VRM Class I. It is assumed that the planned vegetation treatment on 2,850 acres would not be allowed.

For the following analysis it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities, and that oil and gas leases would not be renewed nor future leasing of oil and gas allowed. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates for the WSA.)

Because potentially disturbed areas would be smaller than under the No Action Alternative (20 vs. 6,050 acres), the impacts would be significantly different from the No Action Alternative. Effects on the various resources due to changes in management are discussed below.

AIR QUALITY

Potential fugitive dust emissions from 3,000 acres of coal mining and 28,500 acres of vegetation manipulation (possible with the No Action Alternative) would not occur. However, a small amount of dust could occur from vehicle access on ways constructed in association with valid existing

mining claims, should the claims be developed. Overall, air quality could be expected to remain essentially as at present.

GEOLOGY

No impacts to geology would occur with this alternative.

SOILS

Impacts to soils would be much less with the All Wilderness Alternative than with the No Action Alternative. Soil loss on the possible 20 acres of disturbance related to mineral development could increase 54 cubic yards per year (0.07 percent) (worst-case analysis) over current soil loss until reclamation is complete. However, possible erosion control benefits from the planned 2,850-acre vegetation treatments would be foregone under this alternative. This alternative would allow for less future control of erosion problems, should the need arise within the WSA, because of restrictions on surface modification.

VEGETATION

Because possible surface disturbance would be limited to about 20 acres under the All Wilderness Alternative, there would be only slight modification of existing vegetation types and no significant impacts. Wilderness designation would prevent removal of existing vegetation on 6,030 acres, which may otherwise occur with the No Action Alternative.

WATER RESOURCES

Restraints on mineral development would protect water quality. The potential for increased soil erosion and sediment yield from 20 acres of mining claim related disturbance would not be significant to water quality unless the disturbance were concentrated adjacent to springs or headwaters of perennial streams. Although location of the assumed disturbance cannot be precisely determined at this time, the unnecessary or undue degradation requirements would minimize any possible impacts to water quality from mining claim activities. Also, with this alternative benefits to the watershed from the planned 2,850-acre vegetation manipulation projects would be foregone.

Water resource aspects would be expected to remain essentially as currently exist in the WSA.

MINERAL AND ENERGY RESOURCES

Impacts to mineral and energy resources would relate to lost opportunities to explore and recover mineral and energy resource deposits.

Leasable Minerals

Oil and Gas

Approximately 90 percent of the WSA (74,480 acres) is under oil and gas lease (8,500 acres pre-FLPMA and 64,980 acres post-FLPMA). Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. Since most leases are post-FLPMA (with nonimpairment stipulations), it is unlikely that existing leases could be developed. Further, it is unlikely that a showing of commercial quantities would be made on pre-FLPMA leases prior to their expiration dates, and expired leases would not be reissued.

Exploration for and development of a potential resource of less than 3 million barrels of oil and less than 18 billion cubic feet of natural gas considered recoverable would be foregone with this alternative. However, due to the small size of the potential deposits and the low certainty that these exist, it is concluded that this alternative would not result in a significant loss of the recoverable oil and gas resource.

Coal

The opportunity to recover up to 163 million tons of coal (up to 30 percent of the coal in the Henry Mountain Coal Field) would be foregone with this alternative. However, because most deposits in the WSA are believed to be split, thin, and contain small individual tonnages, it is unlikely that an economically recoverable coal resource would be foregone except in the Wildcat Mesa area. Although coal recovery in that area is not imminent, up to 19 million tons of surface minable coal could be foregone in the long term. At present this would not be significant, but may become more important in the future.

Locatable Minerals

Approximately 10,400 acres are under mining claim within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines.

It is estimated that, if minerals are located prior to wilderness designation, up to 20 acres could be disturbed due to exploration of locatable minerals. The worst-case impact to mineral resources would occur if the potentially recoverable minerals are not within mining claims filed by the date of wilderness designation. In that case, the potential for recovery of up to 50,000 tons of copper, 25 tons of gold, and 500 tons of silver would be foregone. After that date, all other lands (including claims

not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Because production of these metals is not currently occurring and because favorability for the occurrence of mineral resources within the WSA is low, it is unlikely that substantial mining of locatable minerals would occur even without wilderness designation. This alternative is expected to have little or no adverse effect on economically recoverable locatable minerals in the foreseeable future.

WILDLIFE

Approximately 20,000 acres of crucial deer range and 20,100 acres of crucial bison range would be protected by the application of the "Wilderness Management Policy" and by the reduced likelihood for surface-disturbing and other activities, as compared to the No Action Alternative. However, as much as 20 acres of crucial deer and bison range could be subject to surface disturbance associated with existing mineral rights. This acreage represents less than about 0.1 percent of the total crucial deer and bison habitat within the WSA and, therefore, would be insignificant. Of more importance this alternative would preclude the opportunity for the planned vegetation treatment of 2,850 acres of pinyon-juniper on crucial deer and bison range. Potential for an additional 245 AUMs would be foregone along with the ability to support an additional 222 deer or 26 bison.

Because summer range is considered a limiting factor for mule deer on the Henry Mountains (USDI, BLM, 1983b) and land treatments to enhance the quality of this range would not be allowed, mule deer numbers in the WSA would be expected to remain at their present low levels with this alternative.

Wilderness management would protect 20,090 acres of crucial bison range within the WSA. However, bison numbers within the WSA would be expected to decline slightly in the long term with this alternative because (1) current bison use exceeds forage availability by 15 AUMs on crucial yearlong range (Steele Butte Allotment) within the WSA (USDI, BLM, 1983b); and (2) land treatments which would increase forage availability by 245 AUMs would not be allowed. Land treatments are extremely important to bison: not only would they increase forage production but would also help reduce grazing pressure and forage competition on other crucial bison ranges.

There would be no impacts to threatened, endangered, or sensitive animal species with this alternative.

FOREST RESOURCES

No woodland harvest would be allowed, except by non-mechanical means. However, nearly all the aspen and Douglas fir timber is on steep slopes and is unavailable for harvest because of terrain. Although ponderosa pine in the Sawmill Basin area is potentially harvestable, the current MFP does not allow for commercial harvesting, due to the high scenic and recreational values and low timber demand. Although fencepost and firewood cutting would no longer be allowed on 16,950 acres where it is currently available in the WSA, demand for this resource within the WSA has been relatively low, and such needs could adequately be met elsewhere. Use of the forest resource would primarily be incidental to visitor use of the wilderness (i.e., campfires).

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 3,234 AUMs currently allocated in portions of five allotments in the WSA are used by livestock of 30 permittees, and this use would be expected to remain at about the same level. The proposed reservoir and vegetation treatment on 1,000 acres would not be carried out, thereby preventing the potential increase of about 200 AUMs of forage. If not compatible with wilderness values, other facilities for livestock handling could be prevented if proposed in the future. Because very little use of motorized vehicles is currently taking place to manage livestock in the WSA, little change in the present management of livestock grazing is expected with wilderness designation. This alternative could prevent short-term loss of forage on 3,200 acres that may otherwise occur from mineral and energy exploration and development, as projected with the No Action Alternative.

VISUAL RESOURCES

Beneficial effects would occur to the visual resources with the All Wilderness Alternative because the management class would change from VRM Classes II, III, and IV to the more restrictive Class I. This latter category generally allows only natural ecological change to the landscape and, therefore, would decrease the potential for activities that may degrade scenic quality. Approximately 20 acres could be disturbed through mineral development related to valid mining claims. Although mitigative measures would be applied to minimize visual contrast, such development would reduce visual quality and would not meet VRM Class I standards during the mining activity. Even after rehabilitation,

some permanent localized degradation could be expected. With only 20 acres of surface disturbance visual quality of the area as a whole would not be affected.

CULTURAL RESOURCES

The probability of finding additional sites in the WSA is moderate to high. However, compared to other regions of southern Utah, there is little potential for vandalism to cultural resources due to increased primitive recreational use of the WSA. Also, protection afforded by wilderness management would limit vehicular access and outweigh any potential vandalism problems caused by recreational activity. The overall impact of wilderness designation on cultural resources would be positive.

RECREATION

Although use is currently low (about 800 visitor days per year), the WSA has outstanding primitive recreational values. With this alternative, possible mineral-related surface disturbance is assumed to be 20 acres, and the other 81,706 acres of the WSA would be protected. High quality recreational opportunities present would be recognized, managed, and preserved. This would be most significant in the southeastern portion of the WSA where the mountain peaks and outstanding opportunities for primitive recreation are prominent.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined additional increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control any possible destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. If recreation use increased, commercial operations based on primitive recreational activities could apply for use of the WSA.

Only limited ORV use is occurring or is likely to occur due to topographic restraints. Therefore, this alternative would not affect such use of the area except on the 12.8 miles of existing ways now available for hunter access.

WILDERNESS VALUES

Designation and management of all 81,726 acres as wilderness would ensure the preservation of

the wilderness values of size, naturalness, and outstanding opportunities for solitude and primitive and unconfined recreation throughout the WSA, except on up to 20 acres that could be disturbed due to possible mineral development related to valid mining claims. These disturbances would have long-term effects on wilderness values in localized areas but would not be expected to significantly affect wilderness values in the area as a whole. The special geologic and scenic features in this WSA would also be preserved. With wilderness designation, primitive recreation use would be expected to increase an undetermined amount (refer to Recreation section); however, due to the size of the area and wilderness management techniques, the increased visitor use would not adversely affect conditions for primitive recreation and the special values present in the Mt. Ellen-Blue Hills WSA.

LAND USE PLANS AND CONTROLS

Although the *Wayne County Master Plan* is not specific as to location, it normally reflects multiple use of most lands in the County. The *Garfield County Master Plan* recommends that the area adjacent to the Mt. Ellen-Blue Hills WSA (Bull Mountain) be retained for multiple use. Designation of all 81,726 acres of the Mt. Ellen-Blue Hills WSA would, in some respects, be consistent with the multiple-use concept since some resource uses (e.g., livestock grazing and hunting) would continue, although under more restrictive conditions. This alternative would conflict with the Counties' multiple-use concept for resources such as minerals because of restrictive conditions, including the phasing out of leases and closure to future mineral location and lease.

Because it is assumed that State lands within the WSA would be exchanged for lands outside the WSA (refer to Volume I), wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

The BLM Henry Mountain Planning Area MFP does not provide for wilderness designation. A decision by Congress to designate the WSA as wilderness would be an amendment to the BLM land use plans.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be losses in local income and Federal revenues (e.g., oil and gas) currently provided by

resource activities in the WSA (refer to Table 11), as well as loss of potential increases in income and Federal revenues that could occur with the No Action Alternative.

Except for coal the potential for mineral production in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Some existing oil and gas leases and valid mining claims may be developed but wilderness designation would impose strict limitations and preclude new leases and claims from being established in the WSA. This would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for most mineral development is low, it is estimated that potential for most mineral-related local income would not be significantly reduced by wilderness designation. Forgoing possible future coal mining at Wildcat Mesa could limit significant local income in the long term, but not in the foreseeable future due to low market conditions and ample coal supplies elsewhere. Also, any local income related to assessment of future mining claims or to woodland harvest would be lost.

An annual value of \$4,900 attributed to woodland product harvest (firewood and fenceposts) would be foregone.

Livestock use and ranchers' income would continue as at present with an estimated \$64,680 of livestock sales and \$16,170 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with a possible increase of about \$4,000 in livestock sales and \$1,000 in increased ranchers' income.

Increased public awareness of the area resulting from designation could increase recreational use (refer to the Recreation section). Although the amount of increased use resulting from wilderness designation is unknown, the related local expenditures would be small (average of \$4.10 per visitor day statewide). The total increase in related local recreation expenditures likely would be insignificant to both the local economy and individual businesses.

The loss of 73,480 acres now leased would cause an eventual loss of up to \$220,440 per year of lease fees to the Federal Treasury. In addition to these rental fees, any potential royalties from new lease production also could be foregone.

Federal livestock grazing fees would continue at up to \$4,528 per year.

Wilderness designation would eliminate most woodland product harvesting and related Federal revenues, currently estimated at about \$200 annually.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980. Overall, Federal revenues from the WSA would decline by about \$220,640 annually with wilderness designation.

Partial Wilderness Alternative (58,480 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 58,480-acre area designated as wilderness and the 23,246-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, some of the existing mining claims would eventually be explored and developed, causing an estimated 20 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities. There are no existing coal leases. Oil and gas leases would not be renewed and future leasing of oil and gas or coal would not be allowed. Disturbance from 1,850 acres of vegetation treatment for wildlife would not occur in the wilderness area.

It is assumed that, within the nondesignated area, 3,155 acres would be disturbed sometime in the future due to oil and gas, coal, and locatable mineral exploration and development. Overall, 3,175 acres of mineral-related surface disturbance would occur within the WSA, 25 acres less than the No Action Alternative and 3,155 acres more than the All Wilderness Alternative. (Appendix 10 lists the mineral-related surface disturbance assumptions and estimates for the WSA.) In the nondesignated area, 1,000 acres also could be disturbed by a vegetation treatment project for livestock. Total disturbed acres for the Partial Wilderness Alternative are assumed to be 4,175 acres, as compared to 6,050 acres for the No Action Alternative and 20 acres for the All Wilderness Alternative.

The analysis of the No Action Alternative, based

on 3,200 acres of surface disturbance from minerals, shows that full development of potential resources with associated surface disturbance would affect all of the resources in the WSA at various positive and negative degrees. Many of these resources would be affected to a slightly different degree by this Partial Wilderness Alternative which assumes 3,175 acres of mineral-related surface disturbance. This is partly due to location and constraints in the 58,480-acre area designated as wilderness, and partly due to surface-disturbing mineral activities occurring mostly in the undesignated portion of the WSA.

AIR QUALITY

Impacts to air quality would be essentially the same as with the No Action Alternative since all but about 25 acres of the potential coal surface mining would occur in the nondesignated area.

GEOLOGY

Surface mining of coal would modify geologic conditions on 2,800 acres instead of the 2,825 acres for the No Action Alternative.

SOILS

About 4,175 acres of soil would be disturbed as compared to 6,050 acres with the No Action Alternative. Most of this difference would be the 1,850 acres of vegetation treatment not allowed in the 58,480-acre wilderness area. Therefore, soil loss from mineral and energy development would be only 135 cubic yards/year less than with the No Action Alternative and 8,451 cubic yards/year more than with the All Wilderness Alternative.

VEGETATION

This alternative would preserve existing pinyon-juniper vegetation on 1,875 acres (25 acres where coal surface mining would be prevented and 1,850 acres not treated for deer and bison forage) that could otherwise be removed with the No Action Alternative. It would result in removal of up to 4,175 acres of vegetation, all but 20 acres of which would be in the area not designated as wilderness. The 20 acres within the wilderness would have vegetation removed within, or as a result of access to, valid existing mining claims and this could be distributed in several locations. Considering the expected mined land reclamation and the extensive pinyon juniper available in the region, the removal of 4,175 acres of this vegetation type would not be significant to the vegetation or forest resource.

WATER RESOURCES

The headwater areas in the WSA would be within the 58,480-acre designated portion, including 20

springs and 16 miles of perennial streams. This area also includes the high quality waters. The 7 miles of streams in the nondesignated area are of lesser quality. This alternative would protect the most significant water resources in the WSA.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 58,480 acres of oil and gas leases in this area. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 3 million barrels of in-place oil and less than 10 billion cubic feet of natural gas is estimated to be recoverable within the area that would be designated as wilderness with this alternative. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potential resource of up to 2 million barrels of oil and 13 billion cubic feet of natural gas could be foregone. This would allow recovery of 1 million more barrels of oil and 7 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Coal

Approximately 25 acres of surface minable coal may be found within the portion of the WSA that would be designated wilderness. None of this coal is presently leased and it is assumed that none of this coal would be leased before wilderness designation. Therefore, this alternative could result in an estimated 300,000 tons of coal that may be foregone.

However, in the nondesignated area there are 2,800 acres of surface minable coal resources containing up to 18.7 million tons of minable coal. Although none of this currently is leased, it could be developed in the future without direct limitation from wilderness designation.

Locatable Minerals

Approximately 3,200 acres of 226 mining claims are within the area that would be designated

wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially recoverable minerals (refer to Table 5) in the WSA are within the 58,480-acre area that would be designated as wilderness under this alternative. Assuming that the locatable minerals are evenly distributed in the WSA and that the mineral deposits are not included in mining claims filed before designation, the potential for recovery would be foregone on about 68 percent of the WSA. Consequently, about 32 percent of the quantities listed (refer to Table 5) are predicted to be recoverable with this alternative.

Because these metals are not being recovered at present within the WSA and other uncertainties involved (i.e., low probability of discovery and economic considerations), it is unlikely that exploration or development of locatable minerals will occur in either portion of the WSA. Therefore, this alternative would have no significant effect on recovery of these minerals.

WILDLIFE

Wildlife in the designated area would be impacted the same as the All Wilderness Alternative and additional forage for deer and bison would not be provided. Herd sizes would be expected to remain near present levels or be reduced slightly due to forage competition. All of the crucial deer and bison range (refer to Table 6) would be protected within the 58,480-acre area designated as wilderness. In the nondesignated area approximately 1,000 acres of the proposed vegetation treatment for livestock could occur and would provide incidental improvement in wildlife habitat.

FOREST RESOURCES

Impacts to the forest resource would not be significant since current harvest is low and such use could be readily met elsewhere. Likewise, neither of the other two alternatives would have significant impacts to forest resources.

LIVESTOCK

Wilderness designation of 58,480 acres of the WSA would affect domestic livestock grazing essentially the same as with the All Wilderness Alternative, except that about 200 additional AUMs could be obtained from vegetation treatment in the undesignated portion of the WSA. Of the 3,234 AUMs allocated, 2,060 AUMs would be

within the designated portion of the WSA and 1,174 AUMs within the nondesignated portion. Development of future roads or other livestock management facilities for use with 2,060 AUMs in the designated portion could be restricted to preserve wilderness values. Because motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected in the designated portion. Livestock grazing conditions in the undesignated part of the WSA could be improved without wilderness constraints.

VISUAL RESOURCES

Because mineral-related surface disturbance in the WSA would be 3,175 acres with this alternative as compared to 3,200 acres with No Action and 20 acres under All Wilderness, the impact on visual resources would be nearly the same as the No Action Alternative and considerably more than under the All Wilderness Alternative. In the portion recommended for designation, 20 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and exceed VRM Class I management objectives. An additional 3,155 acres in the nondesignated portion of the WSA would be disturbed by future mineral activities and would not meet VRM Class II objectives. The significance of the visual impact would depend on the scattered nature of the disturbance. The 1,000 acres of land treatment in the undesignated portion would temporarily result in a loss of visual quality. Disturbance of a total of 4,175 acres within the WSA would result in localized long-term impairment of visual values and could significantly affect visual resources in the WSA, predominantly in the undesignated part.

CULTURAL RESOURCES

Seven known sites would be protected within the designated portion of the WSA. Another 29 known sites, including the historic stone cabin being nominated for the National Register, would be within the undesignated area. Those sites in the undesignated portion would not receive the added protection that wilderness designation may provide, but still would be covered by the normal cultural resources protection laws and regulations. Due to the potential for up to 3,175 acres of disturbance related to minerals, there would be an increased chance for needed cultural resource mitigation or salvage as compared to the All Wilderness Alternative. However, as with the No Action Alternative, there would be little effect on cultural resources due to the relatively low values in the WSA.

RECREATION

Impacts on recreational values and opportunities for the 58,480-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Little impact on existing ORV recreational use would be expected due to the low amount of such activity in the area, although closure of 4 miles of ways within the designated portion of the WSA could inconvenience a few hunters accustomed to use of those ways. Hunting likely would remain the major recreational activity in the WSA.

In the area that would not be designated (23,246 acres), little change in recreational use is expected due to the limited recreational values. About 8.8 miles of ways in this part of the WSA would continue to be used for ORV access.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 58,480 acres that would be designated wilderness. Size, naturalness (all 58,480 acres are natural), outstanding opportunities for solitude (all 58,480 acres meet the standard), and special features would be preserved. The outstanding opportunities for primitive recreation in the Mt. Ellen area and the somewhat lesser qualities for hiking and primitive camping in the Blue Hills portion of the WSA also would be preserved. Although recreational use could increase (refer to Recreation section under the All Wilderness Alternative), use relative to the size of the designated area would be low. Therefore, no significant effect on solitude and primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 20 acres in the designated area. Additionally, sights, sounds, and emissions of activities (notably surface mining of coal) within the 23,246-acre area that would not be designated could result in some loss of solitude and primitive recreational values within the adjacent designated portion. Overall, this alternative would provide protection for most of the southeast part of the WSA, which is the area where the wilderness qualities are greatest.

In the 23,246-acre area that would not be designated, there would be 3,155 acres of disturbance from mineral and energy exploration and development activities and 1,000 acres of vegetation manipulation. Those activities would degrade wilderness values (naturalness, opportunities for solitude and primitive recreation, and special features) from the commencement of activities through rehabilitation. Thus, long-term impair-

ment of wilderness values in the portion that would not be designated could occur although much of this area is not considered to contain high quality wilderness values at present. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated.

LAND USE PLANS AND CONTROLS

The designated portion of this alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative. If the 7,553 acres of State land within and adjacent to the designated area are exchanged for lands outside the WSA, as requested by the State, then wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns. The undesignated portion would be consistent with current BLM and county land use plans.

SOCIOECONOMICS

Partial designation of this WSA is not expected to result in any changes in existing patterns and trends of population, employment, and local

income distributions. In the long term, coal development could take place on future leases in the nondesignated portion. This could lead to future increased income and revenue in Garfield and Wayne Counties, although this likely would not occur in the near future. The 3,234 AUMs would remain available to cattle and could be increased by about 200 AUMs. Revenue, sales, and returns to ranchers would be the same as with the No Action Alternative. Approximately \$175,440 per year in Federal oil and gas leasing revenue that would otherwise continue under the No Action Alternative would be lost as leases expire. This is \$45,000 less annual loss than with the All Wilderness Alternative. There would be a potential gain in Federal revenue from any future coal leases issued in the undesignated portion. All 23,246 acres could be leased for coal as part of the Henry Mountain Coal Field, although the probability for recovery is low except in the Wildcat Mesa area.

Overall, this alternative would have most of the economic potential as with the No Action Alternative (except oil and gas lease revenues in the designated area) but would still protect that part of the WSA with the highest quality wilderness values.

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Bull Mountain WSA



BULL MOUNTAIN WSA

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BULL MOUNTAIN WSA

(UT-050-242)

INTRODUCTION

General Description of the Area

Bull Mountain Wilderness Study Area (WSA) consists of 11,800 acres of public land in Garfield and Wayne Counties, about 13 miles southwest of Hanksville, Utah. About 8,300 acres of the WSA are in Garfield County and 3500 acres are in Wayne County. Bull Mountain (elevation 9,187 feet) is a prominent peak in the Henry Mountains and is joined to Mt. Ellen by Wickiup Ridge. Bull Mountain has extremely steep, rugged sides, and is domal in shape. Pinyon and juniper trees dominate the lower elevations and mixed conifer trees are found at higher elevations. Principal uses of the area include wildlife habitat, livestock grazing, and low intensity recreation and mineral exploration.

Average annual precipitation ranges from 7 inches at lower elevations to 17 inches atop Bull Mountain. Temperatures range from -20 degrees Fahrenheit (F) to over 80 degrees F depending on elevation and season.

Specific Issues Identified in Scoping

General issues pertaining to more than Bull Mountain WSA are discussed in Volume I. Issues and concerns raised in public scoping meetings (USDI, BLM, 1984d) and specific to Bull Mountain WSA are responded to below:

1. *Comment:* Because the WSA is in a high erosion area that could receive erosion control measures, it should not be designated wilderness.

Response: The effect of wilderness designation and nondesignation on soils and potential erosion control measures in this WSA are discussed under the Description of the Alternatives and Soils sections of this document. Most of the WSA is in a moderate or slight erosion class, and no erosion control measures are planned.

2. *Comment:* The sensitive plant species *Erigeron cronquistii* is in or near this WSA and should be considered.

Response: *Eriogonum* (not *Erigeron*) *cronquistii* is a sensitive species that occurs in the WSA. It has been collected only twice, both times from Bull Mountain. The effect of wilderness designation and nondesignation on

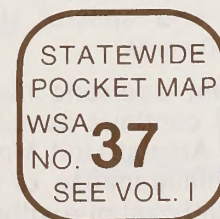
this species is discussed in the Vegetation sections of this document.

3. *Comment:* The mineral potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the mineral industry believe the potential of the WSA to be at least moderate. This information should be considered in the Draft Environmental Impact Statement (EIS).

Response: At this time BLM has not made an independent assessment of geologic information gathered by industry. The SAI (1982) report will be used as the reference on mineral potential for this EIS, but information provided by industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

4. *Comment:* Vegetation manipulation in this WSA is considered mandatory for the continued existence of bison and mule deer within the unit, and designation would eliminate this possibility.

Response: Although an area of approximately 330 acres could have potential for chaining and seeding, the project was not identified or analyzed in BLM planning documents. It is, therefore, not considered as part of the No Action Alternative. A short analysis of the potential benefits of the chaining for wildlife is included in the Wildlife sections of this document. The analysis indicates that vegetation treatments would be beneficial for bison, but the continued existence of bison and mule deer in the WSA is not dependent on potential vegetation manipulation.



DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

No alternatives were identified for this WSA during scoping other than those analyzed.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (11,800 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 11,800-acre Bull Mountain WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The State land adjacent to the WSA (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase. State lands are analyzed as remaining under State ownership.

The following are specific actions that would take place under this alternative:

- All 11,800 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on existing mining claims (1,050 acres) and future mining claims. Development would be regulated by undue and unnecessary degradation guidelines (43 Code of Federal Regulations [CFR] 3809). Existing leases (10,800 acres) and future leases could be developed under Category 1 (standard stipulations) on about 5,100 acres and Category 2 (standard and special stipulations) on about 6,700 acres.
- The present domestic livestock grazing use would continue as authorized in the MFP (193 Animal Unit Months [AUMs]). Use and maintenance of the developed spring would continue without concern for wilderness values. New rangeland developments (none planned) could be imple-

mented without wilderness considerations.

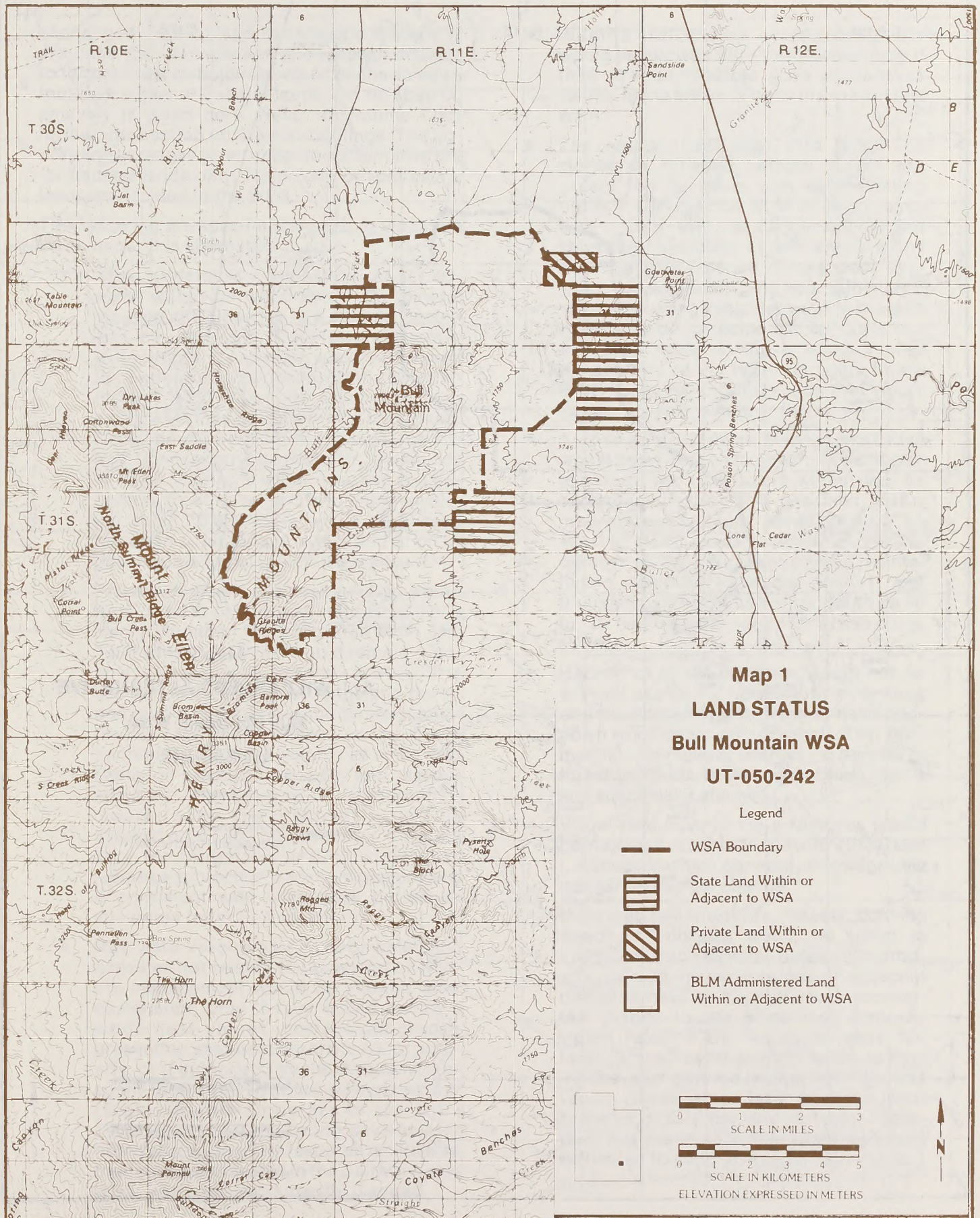
- Developments for wildlife, water resources, etc., would be allowed without concern for wilderness values if in conformance with the current MFP. None are planned.
- The entire WSA acreage would be open to vehicular use, and new access routes would be allowed.
- No commercial woodland harvest sales would be allowed in accordance with the Henry Mountain Planning Area MFP.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (9,880 acres) and Class IV (1,920 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances which threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate without concern for wilderness values.

ALL WILDERNESS ALTERNATIVE

(PROPOSED ACTION)





Under this alternative, all 11,800 acres of the Bull Mountain WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. No State lands are located in the WSA; however, four sections are adjacent (refer to Map 1). One of these, Section 32, Township 30 South, Range 11 East, while not considered an in-holding, would be completely surrounded if Bull Mountain and Mt. Ellen-Blue Hills WSAs were designated wilderness. If this were to occur, the State would recommend this section for exchange. The three remaining State sections would likely not be

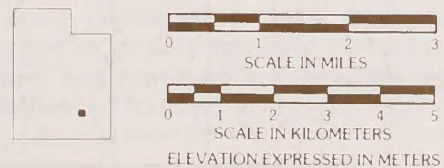
BULL MOUNTAIN WSA



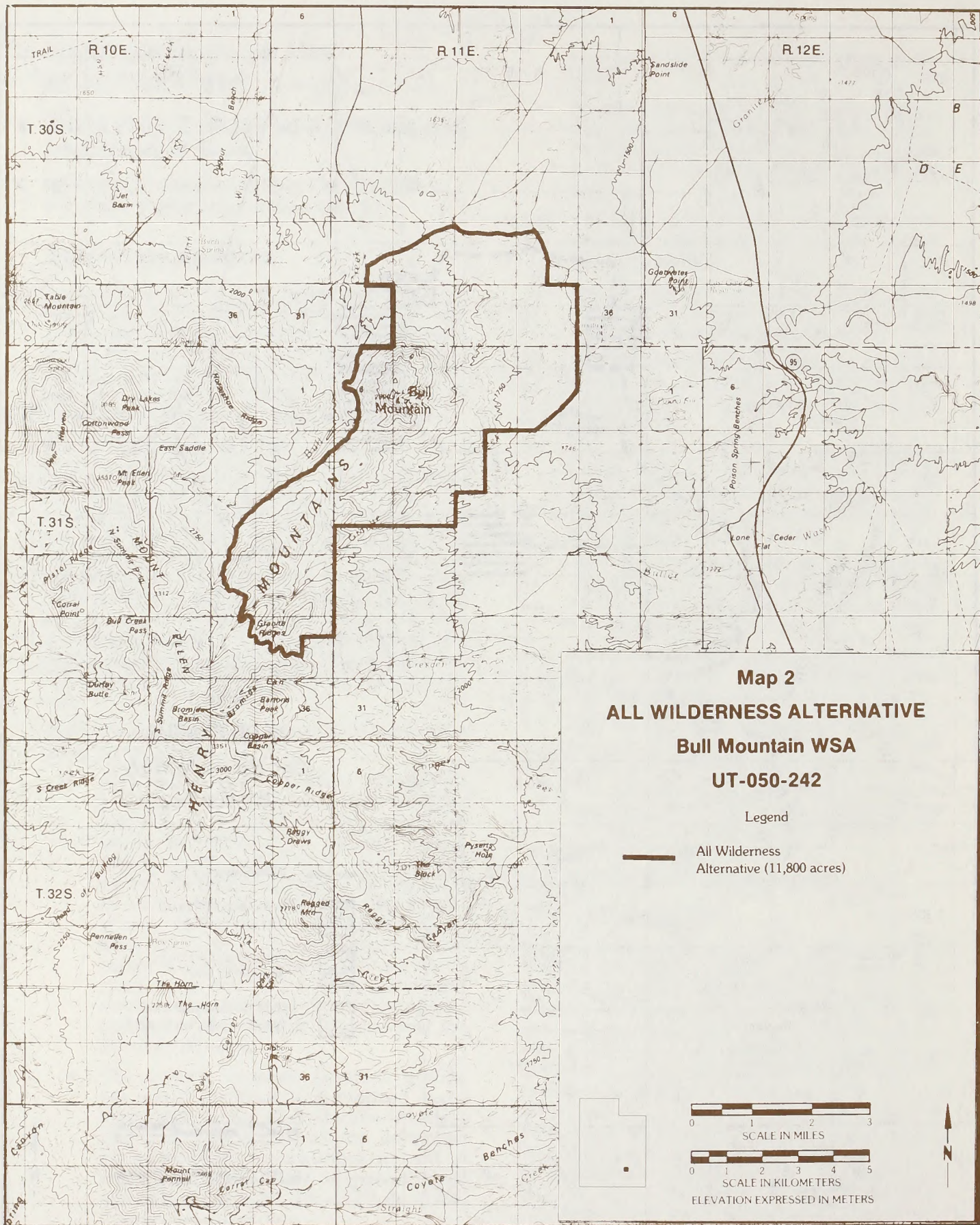
Map 1
LAND STATUS
Bull Mountain WSA
UT-050-242

Legend

-  WSA Boundary
-  State Land Within or Adjacent to WSA
-  Private Land Within or Adjacent to WSA
-  BLM Administered Land Within or Adjacent to WSA



BULL MOUNTAIN WSA



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exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. Refer to Volume I for further information on State in-holdings. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 11,800 acres would be withdrawn from mineral location and closed to new mineral leasing and mineral sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 1,050 acres of existing mining claims that may be determined to be valid. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3800) with wilderness as a consideration. Existing oil and gas leases involving about 10,800 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown.
- Present domestic livestock grazing would be allowed to continue as authorized in the Henry Mountain Planning Area MFP. The 193 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland developments existing at the time of designation (in this case one developed spring) could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new developments (none are planned) would be allowed on a case-by-case basis if necessary for rangeland and/or wilderness resource protection and management and if consistent with wilderness protection standards (refer to Appendix 1).
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). Except for the spring development noted above, no water resource facilities or treatments are located in the Bull Mountain WSA, and none are currently planned.
- Wildlife transplants or improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA.
- The entire 11,800-acre area would be closed to off-road vehicle (ORV) use except for: (1) users with valid existing rights if approved by BLM in accordance with CFR rules; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved live-stock developments. The approximately 3 miles of existing vehicular ways in the area would not be available for vehicular use except as indicated above. About 8 miles (40 percent) of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 11,800-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- Visual resources in the wilderness would be managed in accordance with VRM Class I, standards which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (those which least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.

BULL MOUNTAIN WSA

- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Only those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Unless otherwise stated, information from this section is based on the Henry Mountain Unit Resource Analysis and MFP (USDI, BLM, 1982c) and other BLM technical reports and documents.

Air Quality

The Bull Mountain WSA is in a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act as amended. Capitol Reef National Park, 16 miles west of the WSA, and Canyonlands National Park, 30 miles east, are Class I areas. Air quality and visibility are

generally very good to excellent. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979).

Geology

The Bull Mountain WSA is located in the Canyonlands section of the Colorado Plateau Physiographic Province. In general, this province is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments. Bull Mountain is part of the Henry Mountains and is located in the transition zone between the Henry Mountains Basin on the west and the Monument Upwarp on the east.

Bull Mountain is associated with Mt. Ellen, which is one of five of the Henry Mountain domes formed by the deformation that accompanied physical injection of semifluid magma into the upper crust. The structural form of these mountains composes what are known as stocks and laccoliths. At the center of each of the mountain domes is a stock, around which the laccoliths and intrusive bodies are clustered.

The laccoliths were injected radially away from the stocks into the surrounding sedimentary rocks along bedding planes in between the more incompetent layers. Bull Mountain is actually a different form of an intrusion referred to as a bysmalith. The bysmalith is almost like a laccolith, with the noted exception that the sedimentary rocks forming the roof of the intrusion were lifted by faulting rather than arching. There are several sedimentary formations outcropping within the WSA. They range in age from Jurassic to Cretaceous and consist of the following units, in ascending order: the Carmel, Entrada, Curtis, Summerville, Morrison, Dakota, and Mancos Formations.

These sedimentary units are found on the flanks of Bull Mountain and to the north and east in the flat desert portions of the WSA. In addition to the sedimentary units present in the WSA, there are igneous rocks which make up Bull Mountain.

The topography of the WSA is dominated by the Bull Mountain bysmalith. The mountain has extremely steep, rugged sides and is domal in shape. The sides are broken by relatively shallow, but almost vertical, canyons radiating out from the top in all directions. The canyons are separated by almost vertical intervening ridges. Although the mountain drains in all directions, all runoff flows into the Dirty Devil River. The mountain reaches an elevation of 9,187 feet and stands

BULL MOUNTAIN WSA

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
BULL MOUNTAIN WSA

Resource	Alternatives	
	No Action	All Wilderness (11,800 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 500 tons of uranium oxide, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper.	Oil and gas likely would not be recovered. Assuming a worst-case analysis, recovery of uranium, gold, silver, and copper may also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.
Wildlife	About 1.5 percent of the WSA could be directly affected by mineral and energy development, which could adversely affect wildlife habitat. About 3 percent of the crucial deer and bison range would be adversely affected.	Wildlife would benefit from solitude.
Livestock	Grazing of 193 AUMs and maintenance of existing developments would continue. New developments for livestock could be constructed; however, none are now proposed.	Grazing of 193 AUMs and maintenance of existing developments would continue. Little effect on current livestock management is expected. If proposed, certain new developments might not be allowed.
Visual Resources	The quality of visual resources could be impaired on 180 acres.	Visual quality could be impaired on up to 20 acres.
Recreation	ORV use could continue on 3 miles of ways at current low levels. Overall recreational use could increase from the present 20 visitor days to 30 over the next 20 years. Up to 180 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 3 miles of existing ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 180 acres (1.5 percent of the WSA), but the values in the WSA as a whole would not be affected.	Wilderness values would be protected, except on up to 20 acres, which may be disturbed under valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with Garfield and Wayne County policies, State of Utah plans and policies, and the current BLM Henry Mountain MFP.	Designation would conflict with Garfield and Wayne County concepts of multiple use. It would constitute amendment of the BLM Henry Mountain MFP.
Socio-economics	Annual local sales of less than \$9,042 and Federal revenues of up to \$35,670 would continue. Employment and income could increase from new mineral and energy development, but probability is low.	Annual local sales of less than \$9,042 and Federal revenues of up to \$270 would continue, but Federal revenues of up to \$35,400 annually from mineral leasing would be foregone. Opportunity for future mineral and energy development could be reduced in the WSA.

BULL MOUNTAIN WSA

nearly 3,000 feet above the surrounding sedimentary plateau.

Soils

Soils in the WSA range from high mountain loams and shales to shallow desert sands. Areawide, slopes vary from 2 to 60 percent and average about 20 to 30 percent. Table 2 summarizes soil erosion condition for the entire WSA. Erosion condition was determined by using soil surface factors (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	460	4	1,242
Moderate	1.3	4,120	35	5,356
Slight	0.6	3,860	33	2,316
Stable	0.3	0	0	0
Unclassified		3,360	28	Unknown
Total		11,800	100	Exceeds 8,915

Source: USDI, BLM, 1982c; Leifeste, 1978.

Vegetation

The predominant vegetation types in the WSA are pinyon-juniper and shrub-grass. Some mixed conifers occur at the higher elevations. Stands of ponderosa pine and mixed conifer are found near Dandelion Flat.

Eriogonum cronquistii, a sensitive plant species, occurs within the WSA. There are no officially listed threatened or endangered plant species in the WSA.

Existing vegetation types for the WSA are summarized in Table 3.

TABLE 3
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Pinyon-juniper	4,838	41
Shrubs and grasses	4,248	36
Aspen, fir, pine	1,652	14
Badlands, rock	1,062	9

Source: USDI, BLM, 1982c.

The Bull Mountain WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the WSA are listed on Table 4. PNV is the vegetation types that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Arizona pine forest	2,000	17
Juniper-pinyon woodland	9,800	83

Source: USDI, Geological Survey, 1978.

Water Resources

This WSA contains portions of the watersheds of four streams: Bull Creek, Butler Wash, Crescent Creek, and Granite Creek. The WSA is the recharge recovery area for many springs in the adjacent deserts. There are three springs and no perennial streams in the WSA. Springs at higher elevations contain fairly good quality water.

There is little potential for wells or underground water use. Generally, underground water sources are saline and not acceptable for human use.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is low, due to a marginally favorable geologic environment. An overall importance rating (OIR) of 2 was assigned to the Bull Mountain WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

BULL MOUNTAIN WSA

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report for the WSA. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider the reports prior to making final wilderness recommendations. All mineral resources within the area were assigned favorabilities of f2 or less. The energy and mineral resource rating summary is given in Table 5.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would be present in the WSA in only small amounts.

TABLE 5
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 million cubic feet of gas
Copper	f2	c1	Less than 50,000 tons
Uranium	f2	c1	Less than 500 tons
Coal	f1	c4	None
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None
Gold	f2	c1	Less than 25 tons
Silver	f2	c1	Less than 500 tons

Source: SAI, 1982.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

There are no known occurrences of leasable minerals occurring in the WSA, nor is there any active

drilling involving leasable minerals. All of the WSA is under lease for oil and gas. Approximately 10 million barrels of in-place oil (3 million estimated recoverable) or 60 billion cubic feet of natural gas (18 million cubic feet estimated recoverable) could occur within the WSA. Refer to Appendix 6 for an explanation of recoverability estimates.

Approximately 4,720 acres of the leases in the WSA are pre-FLPMA and 7,080 acres are post-FLPMA. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

The relatively unfavorable igneous history and the discouraging results of nearby exploration in the Paradox Basin resulted in the Bull Mountain WSA's favorability rating of f2 for the occurrence of oil and gas resources (refer to Table 5). Leasing categories and approximate acreages for the WSA are: Category 1 (open with standard stipulations), 5,100 acres; and Category 2 (open with standard and special stipulations), 6,700 acres.

LOCATABLE MINERALS

Portions of the area have been thoroughly prospected and studied geologically. There are no known deposits of locatable minerals in the WSA; however, there is a relatively high certainty that small deposits of gold, silver, and copper occur

BULL MOUNTAIN WSA

within the WSA. The area is considered marginally favorable for uranium deposits (refer to Table 5 for quantities).

Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation. After designation, all other lands (including claims not determined valid) within wilderness would be closed to prospecting and exploration (USDI, BLM, 1983c). Approximately 10 percent (1,050 acres) of the WSA is covered by 51 mining claims in the west, north, and east portions of the WSA. Based on geologic evidence and economic considerations, it is determined that the WSA has low potential for mineral resource development and recovery.

SALABLE MINERALS

The only known or possible occurrences of salable minerals in the WSA are sand and gravel. Potential markets are very small and there are available sources of supply closer than those in the WSA.

Wildlife

Game animals in the WSA include mule deer, cottontails, chukars, cougar, doves, and band-tailed pigeon. Bison use parts of the WSA. Several furbearers, other small mammals, and birds are found in the WSA. No threatened, endangered, or sensitive animal species inhabit the WSA. There are no existing or proposed wildlife management facilities in the WSA. The WSA contains 4,550 acres of crucial deer summer range and 7,000 acres of crucial bison summer range. Current population estimates are 59 deer and 17 bison. No vegetation manipulation projects are currently planned. An area of approximately 330 acres within the WSA could have potential for chaining and seeding.

Forest Resources

Scattered pinyon-juniper trees are found throughout and in areas adjacent to the WSA. There are scattered stands of ponderosa pine, Douglas fir, aspen, and subalpine fir; these species are found primarily at Dandelion Flat and on Wickiup Ridge. Timber volume and terrain preclude economic harvest. There has been no harvest of this resource in this WSA since the early 1900s. The current land use plan recommends no commercial harvest of these species due to lack of demand and protection of scenic, wildlife, and recreation values. There is no record of recent

harvest of any forest products in the WSA. Generally, there are better, more accessible resources closer to regional markets.

Livestock and Wild Horses/Burros

Livestock use is confined to the margins of the WSA because of rugged terrain. No areas within the WSA have been identified for vegetation manipulation projects. Portions of four allotments are in the WSA. Only one of the four has allocated forage within the WSA. There are an estimated 193 AUMs in the WSA (refer to Table 6), and use is below the estimated forage production. The only livestock support facility is one developed spring. No additional improvements are proposed.

Neither wild horses nor burros inhabit this WSA.

TABLE 6
Livestock Grazing Use Data

Allotment	Season of Use	Number of Livestock	Number of Permittees	Number of AUMs in WSA
Sawmill Basin	6/16 to 8/31	110 cattle	2	0
Crescent Creek	6/1 to 9/15	95 cattle	1	0
Burr Point	11/1 to 5/31	304 cattle 2,310 sheep	9 1	193
Hanksville	11/1 to 5/31	665 cattle 2,090 sheep	7 1	0

Source: USDI, BLM, 1982c.

Visual Resources

Scenic values are exceptional throughout the majority of the WSA; there is a variety of vegetation and landforms which contrasts with the surrounding desert. The east side of the WSA is visible from Highway U-95, which has an average daily traffic (ADT) count of 540 vehicles. The west side of the WSA is clearly visible from the Sawmill Basin Road, a secondary travel route which divides the Bull Mountain WSA from the Mt. Ellen-Blue Hills WSA.

The BLM VRM class and scenic quality ratings in the WSA are shown in Table 7, while the VRM system is explained in Appendix 7.

BULL MOUNTAIN WSA

TABLE 7
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	9,880	84
Class B	1,920	16
Class C	0	0
Management Class		
Class I	0	0
Class II	9,880	84
Class III	0	0
Class IV	1,920	16

Source: USDI, BLM, 1982c.

Cultural Resources

There are six recorded archaeological sites (primarily campsites) and no recorded historical sites in the WSA. The WSA is thought to have a low potential for discovery of additional sites.

There are no sites listed in the National Register of Historic Places nor are any known sites eligible for listing. However, the Bull Creek Archaeological District, which is on the National Register of Historic Places, is located immediately north of the WSA. There are 113 recorded sites in this district.

Recreation

Fifteen recreational opportunities in this WSA were evaluated for their quality. Eleven opportunities are present in varying degrees. A summary of selected activities follows.

Dayhiking opportunities are good because of easy access to a hiking route to the summit of Bull Mountain. Recreationists can also hike down Wickiup Ridge from Wickiup Pass, but vegetation restricts movement. Hiking routes total approximately 9 miles.

General sightseeing opportunities are good due to the excellent views of Mt. Ellen (3 miles west), Sawmill Basin, and the canyons of the Dirty Devil River (12 miles east). Also, one can observe many layers of twisted sedimentary rock on the east side of the WSA.

Except for areas near Dandelion Flat and the south end of Wickiup Ridge, the topography and size of the WSA restrict overnight camping and backpacking opportunities.

Visitor use is estimated at approximately 20 visitor days annually. This reflects the day use the area receives (i.e., a round trip to the Bull Mountain summit takes less than 4 hours). The Lonesome Beaver Campground is on the west side of the WSA in Sawmill Basin.

Due to the presence of bison summer range and other wildlife habitat, this WSA contributes toward hunting opportunities in the Henry Mountain Resource Area. The amount of hunting in the WSA is not known, but the following species account for the listed visitor days related to hunting within the entire Henry Mountain Resource Area: bison, 175 days; deer, 342 days; and upland game, 1,106 days. There is little, if any, ORV use in the area due to the rugged terrain. The 3 miles of existing vehicular ways may occasionally be used for hunting and other types of recreation access. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980.

Wilderness Values

SIZE

This WSA contains 11,800 acres and is approximately 8 miles long and 4 miles wide at the widest point. It is immediately adjacent to the 58,480-acre Mt. Ellen-Blue Hills WSA; the two WSAs are separated only by the gravel Sawmill Basin Road.

NATURALNESS

The Bull Mountain WSA is in a completely natural condition. There are no human intrusions requiring rehabilitation.

SOLITUDE

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds. The WSA totals 11,800 acres and consists of steep slopes along Wickiup Ridge leading to Bull Mountain, which tend to concentrate visitor use into travel routes. Several small canyons are found on the eastern side of the WSA. The pinyon-juniper vegetation does not significantly screen recreationists from each other. There are no outside sights and sounds that would have a significant adverse effect on one's ability to find solitude in the WSA. On Bull Mountain, views of the Henry Mountains and the surrounding deserts also enhance the feeling of solitude. These factors, when considered together, indicate that the quality of the opportunities for finding solitude are outstanding throughout the WSA.

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the various recreational opportunities present, and an evaluation of the quality of these opportunities. The entire 11,800-acre WSA was determined, on the basis of quality and diversity, to have outstanding opportunities for primitive, unconfined recreation.

SPECIAL FEATURES

Special features in the WSA are geologic and scenic. There are excellent views of the desert canyon country and the other Henry Mountains from the summit of Bull Mountain. The summit of Bull Mountain also provides excellent opportunities for geologic study.

Land Use Plans and Controls

There are no State or private in-holdings in the WSA. There are four State sections adjacent to the WSA. Approximately 160 acres of private lands are adjacent to the WSA on the north side. There are no private subsurface rights or rights-of-way on Federal land. Mineral leases and claims are discussed in the Mineral and Energy Resources section.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers the southern 8,500 acres of the WSA. The Master Plan recognizes that the county possesses "... some of the most spectacular scenery in the United States The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the Bull Mountain WSA, be retained for multiple uses. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The *Wayne County, Final Report, Master Planning Project* (Call Engineering, Inc., 1976) does not address this area specifically, but generally recommends that "... open spaces be used for many purposes rather than strictly as wilderness areas." It also states "... outstanding natural landmarks should be preserved as much as possible."

The WSA is managed under the BLM Henry Mountain Planning Area MFP which allows multiple uses as described in the No Action Alternative. The Henry Mountain Planning Area MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Socioeconomics

DEMOGRAPHICS

The WSA lies within the boundaries of Wayne and Garfield Counties, two of Utah's least populated and most rural counties. In 1980, the Wayne County population was 1,911 reflecting a population density of 0.77 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1983; University of Utah, Bureau of Economic and Business Research, 1979). In 1980, the Garfield County population was 3,673, reflecting a population density of 0.71 persons per square mile (USDC, Bureau of the Census, 1983; University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Hanksville, a small community of approximately 351 people, located about 21 road miles to the northwest. Green River, about 85 miles north of the WSA in Emery County, is a main gateway and service area for visitors to the Bull Mountain area.

EMPLOYMENT

Wayne and Garfield Counties are two of the poorest counties in the State of Utah (South et al., 1983). Government employment represents the largest employment sector within Wayne County with agriculture a close second and a dominant economic activity of the area. Nonfarm proprietors represent the third largest sector of Wayne County employment (refer to Table 8). Wayne County has some tourism and lumber activities; however, the principal commercial center is Richfield, Utah, located in Sevier County (South et al., 1983). Green River, about 66 road miles north of the WSA in Emery County, is a main gateway and service area for visitors to the Bull Mountain area.

Garfield County serves as the southern gateway to the WSA. Government is the largest employment sector within the county and represents 21 percent of the work force followed by construction, services, manufacturing, and agriculture. The county, however, maintains a diversified economic base (South et al., 1983). The Town of Escalante relies on farming, stockraising, and lumbering, supplemented by tourism, some oil

production, and government employment (South et al., 1983). Another town, Boulder, continues to rely on agriculture.

TABLE 8
1980 Employment
Wayne and Garfield Counties, Utah

Industrial Sector	Wayne County		Garfield County	
	Number	Percent	Number	Percent
Agriculture	191	25	236	11
Mining	9	1	210	10
Construction	84	11	379	17
Manufacturing	37	5	248	11
Transportation, Communication, and Utilities	3	—	85	4
Wholesale and Retail Trade	42	5	125	6
Finance, Insurance, and Real Estate	12	2	16	14
Services	31	4	266	12
Government	207	27	457	21
Nonfarm Proprietors	152	20	157	7
Total	768	100	2,179	100

Sources: Utah Department of Employment Security, 1980; USDC, Bureau of Economic Analysis, 1982.

INCOME AND REVENUES

In 1980, the nonfarm industry sector in Wayne County produced nearly 89 percent or \$7.3 million of total labor and proprietors' income within the county. This represented an annual growth rate of 17.4 percent between 1975 and 1980, and higher than the 13.9-percent growth rate experienced by the State (refer to Table 9). Within this total income, the private sector produced, mainly from mining and construction, 72 percent of these earnings and the government sector, 28 percent. Farm labor and proprietors' income totaled \$0.9 million or 11.1 percent of total personal earnings (University of Utah, Bureau of Economic and Business Research, 1982).

In Garfield County, the nonfarm industry sector in 1980 produced over 96 percent of total labor and proprietors' income representing an annual growth rate of approximately 22 percent (University of Utah, Bureau of Economic and Business Research, 1982) (refer to Table 9). Almost 80 percent of this income came from the private sector, principally mining, construction, and manufacturing, while government sources produced approximately 20 percent of personal income and earnings for the county. Farming produced 3.8 percent of the county's total personal income, amounting to \$949,000.

TABLE 9
1980 Personal Income and Earnings
Wayne and Garfield Counties, Utah

Type/Source	Wayne County		Garfield County	
	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietors' Income (Earnings)	8,245	17.5	24,792	21.9
Total Labor and Proprietors' Income by Industry Source				
Farm	917	17.8	949	16.6
Nonfarm	7,328	17.4	23,843	22.2
Private	5,268	22.7	19,049	26.5
Agricultural	81	(D)	79	(D)
Service and Other	(D)	(D)	4,222	47.0
Mining	(D)	(D)	5,536	66.5
Construction	291	4.1	3,294	14.2
Manufacturing	183	0.9	1,545	16.8
Transportation and Public Utilities	69	1.8	96	1.3
Wholesale Trade	496	3.4	1,302	7.6
Retail Trade	(D)	(D)	189	(D)
Finance, Insurance and Real Estate	(D)	(D)	2,786	16.3
Services	416	11.1	4,794	10.8
Government	2,060	8.2		

Sources: USDC, Bureau of Economic Analysis, 1982; University of Utah, Bureau of Economic and Business Research, 1982.

(D) Not shown to avoid disclosure of confidential information or for items \$50,000 or less. Data are included to totals.

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes local sales and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate sales and revenues.

The WSA has 51 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

No oil and gas or mineral has been produced from the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Eleven livestock operators have a total grazing privilege of 193 AUMs within the WSA. If all this forage were utilized, it would account for \$3,860 of livestock sales and \$965 of ranchers' returns to labor and investment.

TABLE 10
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	None	\$35,400
Mining Claim Assessment	Less than 5,100	None
Livestock Grazing	\$3,860	\$ 27.20
Recreational Use	Less than \$ 82.00	Unknown ²
Total	Less than \$9,042	Up to \$34,427.20

Sources: BLM Files; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

²A few commercial permits have been issued since 1980.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. There is little or no motorized recreational use in the WSA. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Bull Mountain WSA is estimated as about 20 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Wayne and Garfield Counties.

The WSA generates Federal revenues from mineral leases and claims and livestock. (refer to Table 10).

Mineral leases in the WSA cover approximately 11,800 acres. At up to \$3 per acre, lease rental fees generate up to \$35,400 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 193 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$270.20 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines For All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area (although the likelihood is thought to be low) would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without controls for wilderness protection. The

degree of future development is unknown but would probably be relatively low due to the WSA's rough terrain and limited resource potential. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and cause the following disturbance: oil and gas, 160 acres; uranium, copper, gold, and silver, 20 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. Disturbance of 180 acres would result in minor temporary increases in fugitive dust emissions. Because no major sources of air pollutant emissions are proposed in the vicinity of the WSA, air quality would remain essentially as at present.

GEOLOGY

No impacts to geology are expected because surface disturbances associated with locatable minerals (i.e., uranium, copper, gold, and silver) and oil and gas exploration and development activities would probably not exceed 180 acres. This would not significantly affect geology.

SOILS

It is estimated that up to 180 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 180 acres would increase from 486 cubic yards/year to 972 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, short-term maximum annual soil loss in the WSA would increase by approximately 486 cubic yards (approximately 5.5 percent) over the current annual soil loss to approximately 9,400 cubic yards per year.

VEGETATION

Because protective measures would be implemented under existing laws as well as BLM policy and regulations and because only 180 acres of disturbance are anticipated, this alternative would not result in a major change in any vegetation type. *Eriogonum cronquistii*, a sensitive plant species, is found within or near the WSA. Before authorizing surface-disturbing activities (180 acres potential) the BLM would conduct site-specific clearances of the potentially disturbed

areas. If this species could be affected, the BLM would initiate informal consultation with the U.S. Fish and Wildlife Service (FWS) as required by BLM policy (refer to Appendix 4). Because necessary measures would be taken to protect this plant, it can be reasonably concluded that the viability of populations of *Eriogonum cronquistii* would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 486 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources (the WSA contains portions of the watershed of four major creeks) could occur but are not planned in the current MFP for the Henry Mountain Planning Area.

Mineral exploration and development in the area would generally be confined at or near the surface or with widely spaced wells and would not significantly change ground water quantity or quality.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The potential for up to 10 million barrels of oil and up to 60 billion cubic feet of natural gas (in-place) exists within the WSA. About 3 million barrels of oil and 18 billion cubic feet of gas would be recoverable (refer to Appendix 6 for estimates of recoverability). These oil and gas resources could be explored and developed, subject to Category 1 (standard stipulations) on about 5,100 acres and Category 2 (standard and special stipulations) on about 6,700 acres. These categories would have no effect on the operator's ability to explore and develop the area. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. Due to the small size of these deposits, production is not expected under this alternative.

Locatable Minerals

The entire WSA would remain open to mining claim location. The potential deposits in the WSA are less than 50,000 tons of copper, 500 tons of uranium oxide, 500 tons of silver, and 25 tons of gold. Approximately 20 acres could be disturbed due to exploration and development of these locatable mineral resources. Employment of undue and unnecessary degradation stipulations would not affect the operator's ability to develop

the area. However, the likelihood of development is thought to be low because of economic considerations (e.g., transportation, etc., and low resource potentials).

WILDLIFE

Under this alternative, 4,550 acres of crucial deer summer range and 7,000 acres of crucial bison summer range would not be protected by application of the "Wilderness Management Policy" with its reduced likelihood for surface-disturbing and other activities. As much as 180 acres of crucial mule deer and bison range could be subject to surface-disturbing activities associated with valid existing mineral rights. This acreage represents approximately 3 percent of the total crucial deer and bison range within the WSA. The current deer population on crucial summer range within the WSA is estimated at 59 animals (USDI, BLM 1983b). Based on the assumption that deer are evenly distributed throughout this range and that surface disturbance would occur on this area, the loss of 180 acres from surface-disturbing activities could reduce carrying capacity for deer by less than three animals. The current number of bison utilizing the area within the WSA is estimated at 17 animals (USDI, BLM 1983b). Based on the assumption that bison are evenly distributed throughout this range and that all surface disturbance would occur in this area, the loss of 180 acres from surface disturbance and other activities would reduce the carrying capacity for the bison population by one animal within the WSA.

A 330-acre area in the WSA could have potential for chaining and seeding. This project was not analyzed as part of BLM's planning system and is not considered part of the No Action Alternative. Initial estimates indicate a potential net increase in forage production of 45 AUMs on the Sawmill Basin Allotment if the area were chained. Such a chaining, if successful, would provide additional forage (including high-quality forbs) and would also help reduce grazing pressure and forage competition on crucial deer summer range within the WSA. If all of the increased forage production of 45 AUMs were used by mule deer, enough forage would be produced to support an additional 47 deer.

If all the increased production of 45 AUMs were used by bison, enough forage would be produced to support an additional five animals on this range. The actual balance between mule deer and bison is unknown. Without chaining, mule deer and bison numbers would remain at present levels.

There would be no impacts to threatened or endangered animal species under this alternative because none are present within the WSA.

FOREST RESOURCES

Use of the woodland products in this WSA would be limited under this alternative. Under the Henry Mountain Planning Area MFP no commercial harvest sales would be allowed.

LIVESTOCK

Domestic livestock grazing use would continue at 193 AUMs as authorized for 11 permittees in the Henry Mountain Planning Area MFP. There would be no changes in or effect on the current livestock use and management under this alternative. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA and no livestock management facilities are proposed, few, if any, changes in livestock management techniques are expected. Mineral-related disturbance could result in short-term loss of livestock forage.

VISUAL RESOURCES

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 180 acres of surface disturbance from mineral and energy exploration and development would be degraded and VRM Class II management objectives would probably not be met during the short term. After rehabilitation, visual resources would be restored to meet VRM Class II objectives. Even after mitigation and rehabilitation, some permanent localized degradation would result. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the area as a whole. However, the probability of economic development of mineral resources is low.

CULTURAL RESOURCES

Disturbance of 180 acres by mineral exploration and development under this alternative could affect cultural sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would lessen impacts. The overall effect on cultural resources would be low due to the limited amount of cultural resources in the area and mitigating measures that would be taken prior to surface-disturbing activities. Vandalism of sites (not currently a problem) would be

expected to increase in proportion to the general population increase.

RECREATION

Up to 180 acres could be disturbed by mineral and energy activities. Primitive recreational opportunities and quality would be diminished on the affected areas. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for mineral exploration and development would improve access into the area for nonprimitive recreation.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 20 current visitor days per year to 30 visitor days at the end of 20 years. Approximately 3 miles of existing ways would continue to be open to vehicular access, including access for hunting.

WILDERNESS VALUES

Possible mineral and energy exploration and development could disturb an estimated 180 acres. Wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) would be lost or diminished in affected areas during the time of exploration and development. The wilderness values in the area as a whole could be lost if roads, vehicular ways, and drill pads were located throughout the area (worst-case analysis).

LAND USE PLANS AND CONTROLS

The applicable plans are the Wayne and Garfield County Master Plans and the BLM Henry Mountain Planning Area MFP. This alternative would be consistent with those plans because land use within the WSA would continue as at present.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the oil and gas, uranium, or other minerals in the WSA were developed it would increase employment and income for Wayne and Garfield Counties.

However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (193 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$3,860 annually in the livestock sales and \$965 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is estimated to increase only 10 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. The 11,800 acres in the WSA under oil and gas lease would continue to bring up to \$35,400 Federal lease fee revenues per year in addition to new royalties if oil and gas were produced. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$270.20 per year) would continue. About 50 percent of the grazing fees would continue to be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (11,800 Acres) (Proposed Action)

As noted in the Description of the Alternatives section, the major changes that could occur in the 11,800-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 3 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM, as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis, it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 20

acres of disturbance within the WSA. It is also assumed that the existing oil and gas leases would expire before production of commercial quantities, and that oil and gas leases would not be renewed or future leasing of oil and gas allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA. Because potentially disturbed areas would be smaller than under the No Action Alternative (20 vs. 180 acres), the impacts from development and surface disturbance on air quality, geology, water, and cultural resources would be insignificant as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

SOILS

The soil resource could slightly benefit under the All Wilderness Alternative because of the reduced likelihood for surface-disturbing activities.

Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 20 acres would increase from 54 cubic yards/year to 108 cubic yards/year. However, soil loss would decrease as reclamation occurred. The time for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual increase in soil loss from surface disturbance in the WSA would be approximately 54 cubic yards (approximately 0.60 percent) over the current annual soil loss, increasing to approximately 8,968 cubic yards/year. The increase would be 432 cubic yards per year less than under the No Action Alternative.

VEGETATION

The potential for inadvertent disturbance of *Eriogonum cronquistii*, a sensitive plant species, would be less under this alternative. Before authorization of surface disturbance, the BLM would conduct site clearances and consult with the U.S. FWS as outlined for the No Action Alternative and the viability of populations of *Eriogonum cronquistii* would be preserved.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Although approximately all of the WSA (7,080 acres pre-FLPMA and 4,720 acres post-FLPMA) is under oil and gas lease, no exploration or development of oil and gas is presently occurring.

Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be re-issued.

Exploration for and development of a potential resource of less than 10 million barrels of oil and less than 60 billion cubic feet of natural gas (in-place) with 3 million barrels of oil and 18 billion cubic feet of natural gas considered recoverable would be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Locatable Minerals

Approximately 1,050 acres are under mining claim within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. It is estimated that, if minerals are located prior to wilderness designation, up to 20 acres could be disturbed due to exploration of locatable mineral resources. The worst-case impact to minerals would be if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of up to 50,000 tons of copper, 500 tons of uranium oxide, 25 tons of gold, and 500 tons of silver would be foregone. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Because these metals are not currently produced in the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that development would occur even without wilderness designation. Therefore, this alternative would not result in a significant loss of recoverable locatable mineral resources.

WILDLIFE

Under this alternative 4,550 acres of crucial deer summer range and 7,000 acres of crucial bison summer range would be protected by the application of the "Wilderness Management Policy" and by the reduced likelihood for surface-disturbing and other activities. However, 20 acres of crucial

deer summer range could be subject to surface disturbance associated with existing mineral rights. This acreage represents less than 1 percent of the total crucial deer and bison habitat within the WSA. In the event that chaining is feasible in the WSA, this alternative would preclude the opportunity (not planned) for chaining and reseedling as much as 330 acres of pinyon-juniper vegetation on crucial deer and bison summer range. A potential for an estimated 45 additional AUMs would be foregone.

Because summer range is considered a limiting factor for mule deer on the Henry Mountains (USDI, BLM 1983b) and land treatments that would enhance the quality of this range would not be allowed, mule deer numbers on the WSA would be expected to remain at their present low levels under this alternative.

Even though there is sufficient forage in the WSA to meet current bison needs (USDI, BLM 1983b), vegetation treatments would be beneficial to bison. Not only would these treatments provide additional forage, they would also help reduce grazing pressure and forage competition on other crucial bison summer ranges in the area. However, because land treatments enhancing the quality of crucial summer ranges would not be allowed, bison numbers (17 presently) within the WSA would be expected to remain static in the long term under this alternative.

There would be no impacts to threatened or endangered animal species under this alternative.

FOREST RESOURCES

Under this alternative, no woodland harvest would occur. Nearly all of the aspen and Douglas fir timber is on steep slopes and is unavailable for harvest because of terrain. Although about 100 acres of old growth ponderosa pine in the Dandelion Flat area are potentially harvestable, cost analysis indicates that harvesting would not be economical. Currently, there is no demand for commercial forest resources in the Henry Mountains, and the existing MFP does not allow for commercial timber sales.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 193 AUMs currently allocated in the WSA are controlled by 11 livestock permits.

New rangeland improvements would be allowed if determined necessary for the purposes of range-

land and/or wilderness protection and the effective management of these resources. However, development of future roads or other livestock management facilities for use with the 193 AUMs in the WSA could be restricted to preserve wilderness values. Because no improvements have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected. Wilderness designation could reduce short-term loss of livestock forage due to mineral and energy exploration and development.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), closure of the entire area to ORV use, and future mineral leasing and location.

The possible mineral-related surface disturbance associated with development of existing mining claims would be reduced from 180 acres to 20 acres. Although mitigative measures would be applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. The WSA is only about 4 miles wide. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on large portions of the WSA. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

The probability of finding additional sites in the WSA is low. There is potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity and the overall impact would be positive.

RECREATION

Although use is currently low (about 20 visitor days a year), the WSA has outstanding primitive

BULL MOUNTAIN WSA

recreational values. Under this alternative, possible surface disturbance would be reduced from 180 acres to 20 acres. The WSA is only about 4 miles wide. If roads for development of existing mining claims are located throughout the WSA (worst-case analysis) the quality of primitive recreational opportunities would be reduced. However, because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreation experience would likely be preserved in the area as a whole.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. As recreation use increased, other commercial operations based on primitive recreational activities could apply for use of the WSA.

No ORV use is occurring due to topographic restraints. Therefore, this alternative would not affect ORV use of the area. The 3 miles of ways presently available for use would not be available for vehicular access. This would probably reduce hunting use of the area.

WILDERNESS VALUES

Designation and management of all 11,800 acres as wilderness would contribute to the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude and primitive and unconfined recreation, except on up to 20 acres that could be disturbed due to possible mineral development. Under this alternative, the potential for surface-disturbing activities that could impair wilderness values would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through closure of the entire area to ORV use, and through closure of the entire area to future mineral leasing and location.

No development of leases is foreseen under this alternative. The anticipated mineral-related surface disturbance would, therefore, be reduced from 180 acres to 20 acres for development of valid mining claims. Mitigation to protect wilder-

ness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. There are 1,050 acres (10 percent of the WSA) currently under mining claims, and the wilderness values in large portions could be lost, at least until reclamation is completed, if roads and vehicular ways were located throughout the area (worst-case analysis). However, because the potential for mineral production is low and mitigation would be imposed to protect wilderness values, loss of naturalness, outstanding opportunities for solitude and primitive recreation, and the special geologic and scenic features in this WSA would be less likely under wilderness designation than under the No Action Alternative.

Increased recreational use due to designation would be controlled by BLM under a Wilderness Management Plan, and no loss of wilderness values due to increased visitation would be expected.

LAND USE PLANS AND CONTROLS

Although the Wayne County Master Plan is not specific as to location, it favors multiple use of most lands. The Garfield County Master Plan recommends that the area of the Bull Mountain WSA be retained for multiple use. This alternative is generally consistent with the multiple-use concept since most resource uses would continue, although under more restrictive conditions. This alternative would conflict with the counties' multiple-use concept in the area of minerals because restrictive conditions would be placed on mineral development, including the phasing out of leases and closure of the area to future mineral location and lease.

The BLM Henry Mountain Planning Area MFP does not provide for wilderness designation. A decision by Congress to designate the WSA as wilderness would be an amendment to the MFP.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$3,860 of livestock sales and \$965 of ranchers' return to labor and invest-

ment. Proposed improvements for livestock would be foregone along with any resulting increased ranchers' income. No such potential range improvements have been proposed.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 10,800 acres now leased for oil and gas would cause an eventual loss of up to \$35,400 per year of lease fees to the Federal Treasury. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. Commercial outfitters are not presently using the WSA on a regular basis.

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Dirty Devil WSA



DIRTY DEVIL WSA

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DIRTY DEVIL WSA

(UT-050-236A)

INTRODUCTION

General Description of the Area

The Dirty Devil Wilderness Study Area (WSA) consists of 61,000 acres of public land managed by the BLM Richfield District's Henry Mountain Resource Area. It is located in the Canyonlands section of the Colorado Plateau Physiographic Province, approximately 5 miles east of Hanksville, Utah, in Wayne County. In general, this province is characterized by arid and semiarid climate, deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

The geology of the Dirty Devil WSA is dominated by the Navajo Formation, a sedimentary sandstone formation with considerable color variation and a tendency to form sheer cliffs and narrow canyons, depending on various geologic factors. The canyons of the Dirty Devil River are well developed, averaging over 500 feet deep. An extensive network of side canyons, several of which are over 10 miles in length, has also been formed. Sheer cliffs and large rock overhangs are found where water has undermined the rock strata. Rolling slickrock terrain characterizes the benchlands between the side canyons. Other formations include the Moenkopi, Chinle, and Wingate.

Rainfall generally averages less than 10 inches annually, with the greatest precipitation period during summer and early fall. Temperatures can range from under 0 degrees Fahrenheit (F) in the winter to over 100 degrees F in the summer.

The majority of the WSA consists of barren outcrops, with the balance consisting of a variety of desert plants, primarily blackbrush. Other types include pinyon-juniper, nuttall saltbush, and a low-growing oak associated with sand dunes.

Specific Issues Identified in Scoping

In addition to those general issues discussed in Volume I of this Environmental Impact Statement (EIS), the following issues and concerns were identified specifically for this WSA through formal public scoping (USDI, BLM, 1984d):

1. *Comment:* How would designation/non-designation impact the success of desert bighorn sheep transplants?

Response: It is anticipated that the desert bighorn sheep transplants would be allowed if the WSA were designated wilderness. As

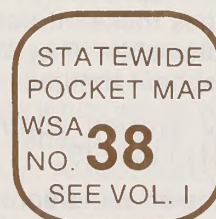
discussed in the Environmental Consequences section, wilderness designation would benefit desert bighorn sheep through the preservation of solitude; however, water could be a limiting factor. Nondesignation could benefit the desert bighorn sheep by allowing the development of water sources, but could negatively affect them by degrading their habitat due to disturbance from mineral and energy exploration and development.

2. *Comment:* This WSA contains historic sites associated with the Wild Bunch, which should be protected by wilderness designation.

Response: Wilderness designation would protect historic sites within the boundaries of the WSA. It would be managed in accordance with the BLM's "Wilderness Management Policy" to preserve its wilderness character.

3. *Comment:* Wilderness designation would protect the Dirty Devil River, which is a Nationwide Rivers Inventory segment with potential for study and addition to the National Wild and Scenic Rivers System. How would designation/nondesignation impact this river segment?

Response: If an area is not designated wilderness, the current approved land use plan would determine land management direction. The segment of the Dirty Devil with potential for study and addition to the National Wild and Scenic Rivers System within the WSA would continue to fall under the provisions of the August 2, 1979 Presidential Memorandum regarding Wild and Scenic Rivers and National Trails. In the August 10, 1980, Council of Environmental Quality (CEQ) Memorandum, specific actions were outlined for interagency consultation to avoid or mitigate adverse effects on rivers in the Nationwide Rivers Inventory. These procedures are



required as part of the environmental analysis process regarding any proposed action which could impact an inventory river. If the area were designated wilderness, the river's outstanding values would be protected and preserved. The *Wilderness Act of 1964* and the BLM's "Wilderness Management Policy" would be used as a guide to determine permissible activities.

4. *Comment:* Certain special features (i.e., Anasazi ruins, hanging gardens, spring pour-offs) enhance the wilderness values and experiences in the WSA. Would these features be preserved?

Response: Special features would also be protected and preserved by wilderness designation to the extent possible; however, some vandalism would continue, and a specific Wilderness Management Plan would be developed to govern use and protection of the wilderness area.

5. *Comment:* Portions of the area seem to have significant intrusions. Were the wilderness criteria consistently applied?

Response: BLM incorporates the wilderness study phase into the land-use planning process to ensure that an array of alternative uses and resources are evaluated before recommending a WSA as suitable or unsuitable for wilderness designation. Specific guidelines for the study phase are outlined in the "Wilderness Study Policy; Policies, Criteria, and Guidelines for Conducting Wilderness Studies on Public Lands" (USDI, BLM, 1982a). In developing a wilderness study policy, BLM formulated two wilderness planning criteria and six quality standards for analysis relative to each WSA. In Utah all eight of these factors are planning criteria. It is the intent of BLM to apply these specific guidelines, that include naturalness criteria, consistently. As related in the Affected Environment section, even though there are numerous drill pad sites in the southern end of the WSA and in Sams Mesa Box and Twin Corral Canyons as well as 30 miles of road presently being rehabilitated, BLM judges these intrusions to be substantially unnoticeable. The WSA is not pristine, but does appear natural.

6. *Comment:* Soil erosion control issues should be analyzed in the EIS.

Response: Soil erosion conditions are analyzed in this document. The analysis indicates that most of the soil erosion is natural.

There are no proposed developments for control of soil erosion in the WSA.

These specific issues, along with the general issues identified in Volume I, are also discussed in the Affected Environment and Environmental Consequences sections of this analysis.

Several concerns pertaining to the wilderness study process and/or the environmental analysis process were also raised during scoping. These concerns are discussed in the scoping section of Volume I rather than in individual analyses for WSAs.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

No alternatives other than those analyzed below were raised for this WSA during scoping.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (61,000 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 61,000-acre Dirty Devil WSA would be designated as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The 2,555 acres of State land within the area have not been identified in the MFP for Federal acquisition through exchange or purchase (refer to Map 1.) Refer to Volume I for further information regarding State in-holdings. There are no private or split estate lands located within the WSA. Acreage figures and quantities in this analysis are for Federal lands only.

The following are specific actions that would occur under this alternative.

- About 9,020 acres would be managed as leasing Category 1 (standard stipulations), 50,540 acres as Category 2 (standard and

special stipulations), and 1,440 acres (part of Beaver Wash Canyon Area of Critical Environmental Concern [ACEC]) (refer to Map 1) as Category 4 (no leasing). The entire area would remain open to mineral leasing and sale except for 1,440 acres closed in Beaver Wash Canyon. Development work, extraction, and possible patent would be allowed on existing claims (17,990 acres) and future mining claims. About 20 acres of the WSA are within the Tar Sand Triangle Special Tar Sand Area (STSA) and are involved in lease conversion applications for tar sand development by in-situ methods (USDI, National Park Service [NPS] and BLM, 1984). Under this alternative it is assumed that any wilderness protection stipulations applied to the leases while the WSA is under wilderness review would be dropped if the area is not designated.

- The present domestic livestock grazing use in the area would continue as authorized in the MFP (128 Animal Unit Months [AUMs]). New rangeland improvements could be implemented without wilderness considerations, although none are presently planned.
- Developments for wildlife, water resources, etc. would be allowed without wilderness consideration if in conformance with the MFP. However, no rangeland improvements are in existence nor are any planned for this WSA.
- Approximately 58,440 acres (including 18 miles of existing vehicular ways) would be closed to off-road vehicle (ORV) use except to those users with valid existing rights, if approved by BLM in accordance with 43 Code of Federal Regulations (CFR) provisions or for occasional or short-term vehicular access for maintenance of developments. The remaining 2,560 acres would be open to vehicular use.
- The existing recreational trail to Angels Point would be maintained by any necessary means.
- Approximately 58,440 acres would be closed to forest product harvest. The remainder of the WSA (2,560 acres) would remain open to forest product harvest. However, there is no harvest of forest products at the present time, nor is any planned.

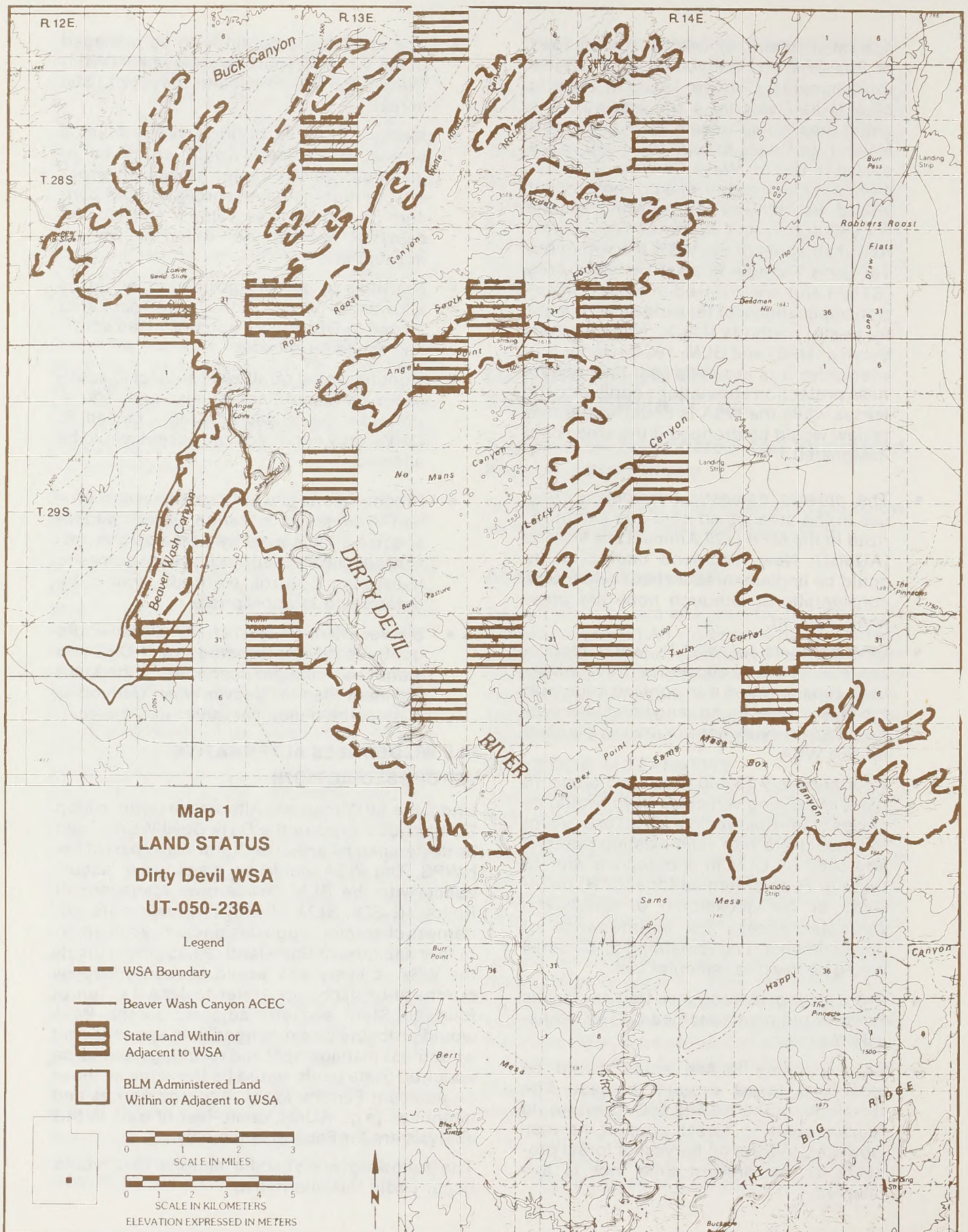
- The area would continue to be managed under Visual Resource Management (VRM) Class II (58,440 acres) and Class IV (2,560 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances which threaten human life, property, or high-value resources without concern for wilderness values. Methods of control would be determined as appropriate.
- Activities to gather information would be allowed by permit. In the 58,440-acre area closed to ORVs, only nonmotorized activities would be allowed.
- Hunting would be allowed subject to applicable State and Federal laws and regulations. In the 58,440-acre area closed to ORVs, only nonmotorized access would be allowed.
- Predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Control methods would be determined as appropriate.
- Beaver Wash Canyon (1,440 acres) would continue to be designated as an ACEC and would be managed according to the Management Plan for Beaver Wash Canyon to protect the biological values in the area.

ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

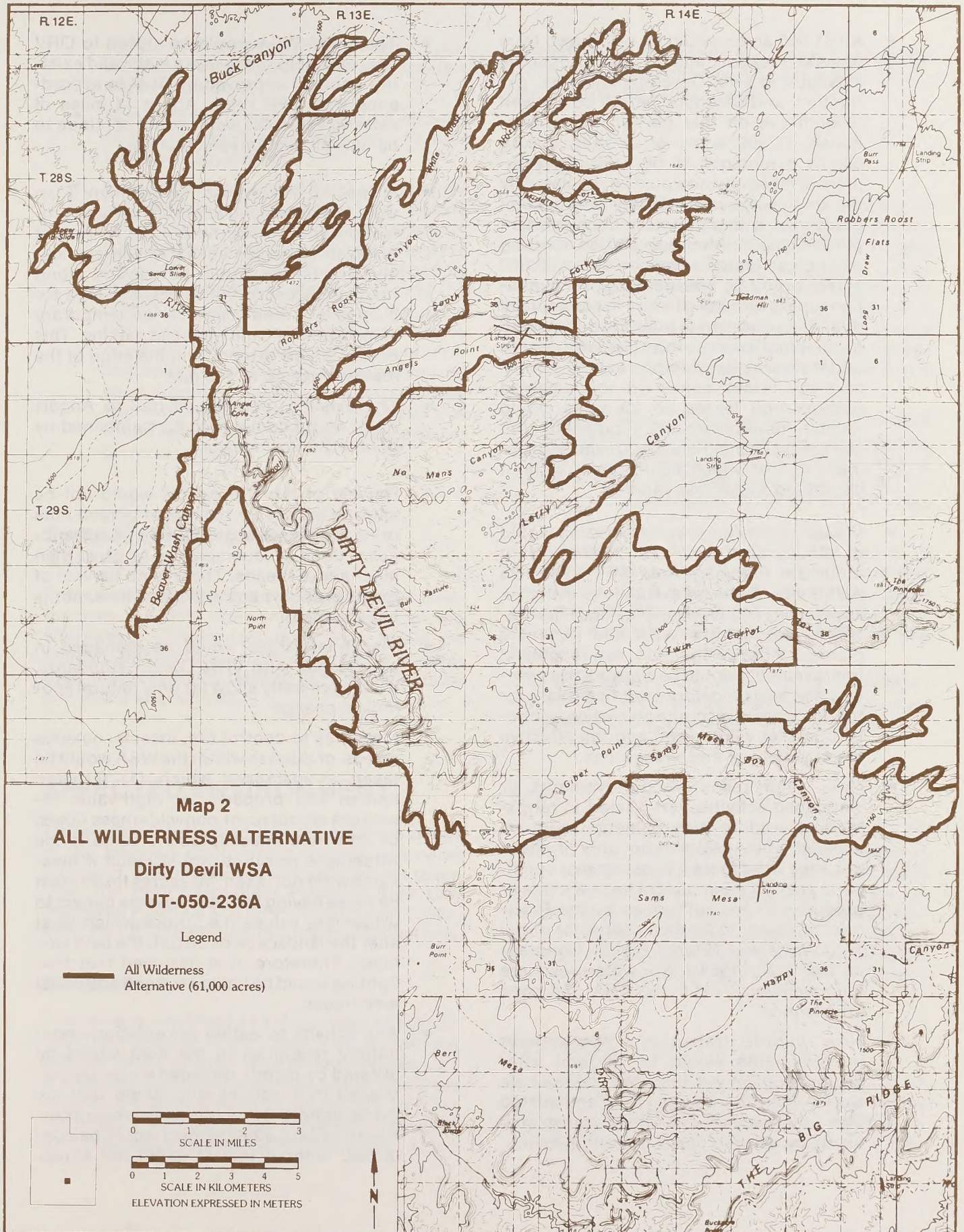
Under the All Wilderness Alternative (refer to Map 2), all 61,000 acres of the Dirty Devil WSA would be designated by an act of Congress as part of the NWPS. The WSA would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of four sections of State land (2,555 acres) inside the WSA is likely and would be authorized by purchase or exchange (refer to Map 1). Ten of fourteen State sections adjacent to the WSA would probably be exchanged. It is assumed that wilderness management and resulting impacts on acquired State lands would be the same as those on adjacent Federal lands. Acreage figures and quantities (e.g., AUMs, cubic-feet of gas) in this analysis are for Federal lands only.

The following are specific actions that would occur under this alternative:

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- All 61,000 acres would be withdrawn from mineral location and closed to mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of approximately 17,990 acres of existing mining claims determined to be valid. Development of these claims would be regulated by the undue and unnecessary degradation guidelines with wilderness consideration (43 CFR 3809). After designation, existing oil and gas leases, involving about 35,000 acres, would be phased out upon expiration unless an oil or gas find in commercial quantities is shown or leases are converted to combined hydrocarbon (tar sand) leases under provisions of Public Law 97-78. Oil and gas leases converted to combined hydrocarbon leases on 20 acres would contain nonimpairment stipulations (no surface occupancy) limiting tar sand development to that which could occur without degrading wilderness values.
- Present domestic livestock grazing would continue, as authorized in the Henry Mountain Planning Area MFP. The 128 AUMs would remain available to livestock as presently allotted. No rangeland improvements exist in this WSA and none are planned. After designation, new rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources.
- New water resource improvements or watershed activities not related to rangeland or wildlife management would be allowed after designation only if these enhance wilderness values, correct conditions presenting imminent hazard to life or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource improvements exist in the WSA, and none are planned.
- New wildlife transplants and habitat improvements would be allowed after designation only if these are compatible with wilderness values. It is anticipated that planned bighorn sheep transplants would be allowed under this alternative.
- The entire WSA would be closed to ORV use, except to those users with valid existing rights, if approved by BLM in accordance with CFR rules. About 18 miles of existing vehicular ways would continue to be unavailable for vehicular use.
- A specific Wilderness Management Plan would be developed to govern use and protection of the wilderness area. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- The existing recreational trail to Angels Point would continue to be maintained by nonmechanical means.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any planned.
- Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the WSA would be taken in instances which (1) threaten human life, property, or high-value resources on adjacent nonwilderness lands; or (2) where unacceptable change to the wilderness resource would result if measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those which least alter the landscape or disturb the land surface). Therefore, it is assumed that fire-fighting would be limited to hand and aerial techniques.
- Any activity to gather information about natural resources in the area would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of wilderness resources. Research and other studies would be conducted without use of motorized equip-

ment or construction of temporary or permanent structures unless no other feasible alternatives exist.

- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating only the offending individuals while at the same time posing the least possible hazard to other animals or wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only under such conditions that would ensure minimum disturbance to wilderness values.

Summary of Environmental Consequences

Table 1 presents the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

This section briefly describes the resource values of the affected environment. Unless otherwise indicated, information for this section was taken from the Henry Mountain Planning Area Unit Resource Analysis and MFP (USDI, BLM, 1982c) and other BLM technical reports and documents.

Air Quality

This WSA is classified as a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act, as amended, and is affected little by air pollution. Visual quality is excellent, with an average visual range from 90 to 130 miles. The WSA is near the center of the area with the highest visual range (70+ miles) in the

United States (Environmental Protection Agency, 1979). Canyonlands National Park, 6 miles east, is the nearest PSD Class I area.

Geology

The Dirty Devil WSA is situated on the northwest flanks of the north-south trending Monument Upwarp; this upwarp is in the Canyonlands section of the Colorado Plateau Physiographic Province. Structurally, the area is quite stable with only six minor faults. The faults are normal with displacement between 100-200 feet, all trending in a northwest-southeast direction. The largest of these faults can be traced no further than 7 or 8 miles.

The stratigraphic units exposed within the WSA consist of the following formations (in ascending order): Moenkopi, Chinle, Wingate, Kayenta, and Navajo Sandstone. These strata are all of the Triassic and Jurassic Ages (140 to 270 million years old).

The strata within the WSA are sedimentary in nature and were deposited in shallow tidal-flat conditions on broad floodplains in sluggish streams and backwater lakes, point bar and channel deposits, and large eolian Sahara-like dunes.

This WSA varies in elevation from about 4,000 to 4,800 feet. The canyons of the Dirty Devil are well developed, averaging over 500 feet in depth.

Soils

Most of the WSA is made up of sandstone outcrops. The higher desert mesas have shallow to deep sandy soils, with some river wash soils along the Dirty Devil River. Approximately 75 percent of the WSA is in a critical erosion condition. Virtually all erosion is caused by natural geologic forces. Table 2 summarizes soil erosion condition in the WSA (terms are defined in the Glossary).

Vegetation

About 70 percent of the WSA is composed of barren rock outcrops or sand with the balance consisting of a variety of desert plants, mostly blackbrush. This is the most prevalent plant spe-

DIRTY DEVIL WSA
TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
DIRTY DEVIL WSA

Resource	Alternatives	
	No Action	All Wilderness (61,000 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 49,500 barrels of oil from tar sand, 50,000 tons of copper, and 500 tons of uranium oxide.	Oil, gas, and tar sand likely would not be recovered. Assuming a worst-case analysis, the recovery of copper and uranium would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.
Wildlife	Less than 1 percent of the WSA would be directly affected by mineral and energy development, which would adversely affect wildlife habitat on the disturbed areas.	Wildlife would benefit from solitude.
Livestock	Grazing of 128 AUMs would continue. New developments for livestock could be constructed; however, none are now proposed.	Grazing of 128 AUMs would continue. If proposed, some new livestock facilities might not be allowed. Little effect on current livestock grazing is expected.
Visual Resources	The quality of visual resources could be impaired on up to 194 acres.	Visual quality could be impaired on up to 20 acres.
Recreation	ORV use would continue at current levels. The 18 miles of vehicular ways in the WSA would be closed to ORV use. Overall recreational use could increase from 125 current visitor days per year to 186 over the next 20 years. Up to 194 acres of disturbance from energy and mineral exploration and development would reduce the quality of primitive recreation.	The 18 miles of vehicular ways in the WSA would continue to be closed. Primitive recreational use would increase by an undetermined amount, possibly 10 percent per year, due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 194 acres, but the values in the WSA as a whole would not be affected.	Wilderness values would be protected, except on up to 20 acres which could be disturbed by surface disturbance associated with valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with the <i>Wayne County Master Plan</i> , State of Utah plans and policies, and the current BLM Henry Mountain MFP.	Designation would not be consistent with the <i>Wayne County Master Plan</i> . Exchange of State lands would be consistent with State policies. Designation would constitute an amendment to the BLM Henry Mountain MFP.
Socio-economics	Annual local sales of less than \$3,072 and Federal revenues of \$105,179 would continue. If additional acreage is leased for energy and mineral development, Federal lease fee revenues would be increased by \$78,000. Local employment and income could increase from new mineral and energy development, but the probability is low.	Annual sales of less than \$3,072 and Federal grazing fee revenues of \$179 would continue. If energy and mineral leases were not renewed and new leasing not permitted, Federal revenues would be reduced by up to \$183,179. Opportunity for economic benefits from future increased energy and mineral development would be foregone.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	45,750	75	123,525
Moderate	1.3	6,100	10	7,930
Slight	0.6	6,100	10	3,660
Stable	0.3	3,050	5	915
Total		61,000	100	136,030

Sources: USDI, BLM, 1982c; Leifeste, 1978.

cies within the warm desert shrub communities, and it occupies the lowest, warmest, and generally driest areas of the WSA. The vegetation in these communities is transitional in type between that of the Lower Sonoran Zone and the Upper Sonoran Zone (Neese, 1981). These communities occupy canyon bottoms, floodplains, slickrock, and sand deserts below 5,000 feet (Neese, 1981).

Other vegetation types include pinyon-juniper, nuttall saltbush, and low-growing oak associated with sand dunes.

There are no known threatened, endangered, or sensitive plant species in the WSA. Table 3 summarizes existing vegetation types in the WSA.

TABLE 3
Existing Vegetation Types

Existing Vegetation Types	Acres	Percent of WSA
Rock, sand	42,700	70
Blackbrush	11,590	19
Grasses and shrubs	6,710	11
Total	61,000	100

Source: USDI, BLM, 1982c

The Dirty Devil WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978) and the Navajo Basin phytogeographic subdivision of southwestern Utah (Neese, 1981). The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland. PNV is the vegetation type that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the

actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

The WSA contains small, isolated hanging-garden type vegetation. While not unique to the area, this vegetation type is becoming nearly nonexistent at the base of the Henry Mountains. However, it can be found on moist cliffs and in alcoves in Glen Canyon and in tributary canyons (Neese, 1981). Representative plant species include Eastwood monkey flower, maidenhair fern, Colorado columbine, and giant helleborine (Neese, 1981). Riparian vegetation is restricted to stream channels and water bottoms such as along the Dirty Devil River. It occupies a small acreage and is not listed separately in Table 3.

Water Resources

There are up to 15 springs in the WSA; a few of these produce water year-round. These are located in the side canyons which drain into the Dirty Devil River. The Dirty Devil River is the primary water source and the major perennial stream (totaling approximately 30 miles within the WSA). The springs and seeps in the WSA are not mapped but have been seen and reported by BLM personnel (Sip, 1984a). These have not been sampled to determine quality or quantity.

The potential for flash floods in the WSA is very high, especially during the summer and early fall.

There are no improved wells in this WSA. There is one improved well (Jeffery Wells) which is close to the boundary. This well is producing water from the Navajo Sandstone. Therefore, the potential for wells and underground water within the WSA does exist. The water-bearing aquifer in this area is the Navajo Sandstone. The general area has aquifers capable of producing 5 to 50 gallons per minute of fairly high quality water with total dissolved solids (TDS) ranging from 250 to 1,000 parts per million (ppm) (Guisti, 1977). No data on water quantity or quality are available for the WSA.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its mineral and

energy resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is low to moderate mainly due to the generally unfavorable geologic environment.

An overall importance rating (OIR) of 2+ was assigned to the Dirty Devil WSA by SAI (1982). The OIR is given on a scale of 1 to 4 where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and the Bureau of Mines in an independent mineral investigation report for the WSA. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

All resources were assigned favorabilities of f2 or less, with the exception of the tar sand resource. The estimated mineral and energy resource rating summary is given in Table 4.

TABLE 4
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic ft. of gas
Tar Sand	f4	c4	Less than 500 million barrels (oil)
Copper	f2	c1	Less than 50,000 tons
Uranium	f2	c1	Less than 500 tons
Coal	f1	c4	None
Geothermal	f1	c4	None
Gold	f1	c3	Little to none
Silver	f1	c3	Little to none

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would be present in the WSA in only small amounts.

LEASABLE MINERALS

There are no known deposits of leasable minerals occurring within the Dirty Devil WSA. Leasable minerals that could occur here include oil and gas, tar sand, and carbon dioxide, but there are no active exploration, drilling, or mining activities for leasable minerals in the WSA (Jackson, 1983). None of the leases currently show evidence of commercial quantities of leasable minerals.

Oil and Gas

As of March 1984, approximately 35,000 acres of the WSA were under oil and gas lease. Approximately 20,000 acres are pre-FLPMA and 15,000 acres of these leases are post-FLPMA. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases. The MFP for this area places 50,540 acres in Category 2 (open to leasing with standard and special stipulations) and 1,440 acres in Category 4 (no leasing).

The geology of the WSA is not favorable for oil and gas, despite its projected position within the Paradox Basin. Exploratory drilling in the vicinity of the Dirty Devil WSA has led some geologists to conclude that the area is not petroliferous (SAI, 1982). Reserves, if any, are probably less than 10 million barrels of in-place oil or 60 billion cubic feet of natural gas of which approximately 3 million barrels of oil or 18 billion cubic feet of natural gas would be recoverable. (Refer to Appendix 6 for estimates of recoverability.)

Tar Sand

Approximately 20 acres of the Dirty Devil WSA overlap with the Tar Sand Triangle STSA. Tar sand deposits occur principally in the White Rim Sandstone, and the likelihood of occurrence decreases from south to north. The White Rim Sandstone is as thick as 300 feet beneath the French Spring-Happy Canyon WSA, which borders the southeast boundary of the Dirty Devil WSA (Campbell and Ritzma, 1979). Although the White Rim Sandstone is known over a broad region for its excellent reservoir characteristics, reserves west of the Tar Sand Triangle STSA are conjectural. There is no definitive information relating tar sand deposits underlying the Dirty Devil WSA with the main deposits to the east (SAI, 1982). SAI (1982) indicates the potential for in-place tar sand oil in the WSA to be less than 500 million barrels. If the resource were evenly distributed throughout the WSA there would be less than 165,000 barrels of oil in-place (49,500 barrels recoverable) in the 20-acre portion of the Tar Sand Triangle STSA within the Dirty Devil WSA.

LOCATABLE MINERALS

Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation. After that date, all other lands (including claims not determined valid) within wilderness would be closed to prospecting and exploration (USDI, BLM, 1981b).

There are no known commercial deposits of locatable minerals in the Dirty Devil WSA. No

claim is currently producing commercial quantities. Although a validity determination must be made on all claims on a case-by-case basis, the favorability and certainty ratings indicate that no claim is likely to be determined valid.

Uranium exploration has occurred sporadically since the 1950s. The Cotter Corporation drilled 25-30 holes in the Twin Corral Box Canyon in 1979-80 and found no significant mineralization. There is a potential for the occurrence of commercial quantities of uranium in the Moss Back Member of the Chinle Formation (rated f2/c1), which underlies the 61,000 acres of the Dirty Devil WSA.

The potential for locatable minerals such as gold, silver, and copper is considered low (SAI, 1982) due to an unfavorable geologic environment (Jackson, 1983). Copper ore is found in association with uranium ore in the Chinle Formation underlying the WSA.

There are 873 mining claims located in the WSA, involving 17,990 acres (29 percent of the WSA). These are lode mining claims staked primarily for uranium (Jackson, 1983).

SALABLE MINERALS

The only possible salable minerals in the WSA are sand and gravel. Potential markets are very small and there are available sources of supply closer than those found in this WSA.

Wildlife

Several species of wildlife may be found in the WSA. These include mule deer, antelope, fox, coyote, and badger, as well as a few species of birds. The area contains about 3 percent of the habitat for Deer Herd Unit 29. This herd unit covers the San Rafael Desert but their distribution and abundance is principally along the river bottoms, especially the Price River, all of which are outside the WSA (Utah Division of Wildlife Resources [UDWR] 1975 and 1977).

The area also provides less than 25 percent of substantial value habitat for Antelope Herd Unit 9. This herd is widely scattered and is limited by the availability of water (UDWR, 1982). Pronghorn antelope need up to 1.2 gallons of water per animal per day during the peak of summer (Salwasser, 1980). Also, most pronghorn antelope are found within 4 miles of a water source.

UDWR introduced desert bighorn sheep onto the nearby Orange Cliffs in 1982. The WSA contains

habitat for this species. The distribution of water is the greatest limiting factor for this species (Monson and Sumner, 1980).

As previously stated, there are approximately 15 springs in the WSA but the amount of water present is not known. Beaver Wash Canyon, a side drainage to the Dirty Devil River, contains a perennial stream and riparian habitat which supports several colonies of beaver. Mule deer, pronghorn antelope, and bighorn sheep populations would probably be distributed near the Dirty Devil River and in Beaver Wash Canyon.

No threatened and endangered species inhabit the area, but Bell's vireo and golden eagle (which BLM considers sensitive species) may occasionally be seen in the WSA. There is no critical habitat in the WSA although the cliffs along the Dirty Devil River could provide excellent nesting sites for the endangered peregrine falcon.

There are no existing wildlife management facilities in the WSA and none are planned.

Forest Resources

Forest resources are limited to areas of generally widely scattered pinyon-juniper on some of the mesa areas; most of the area is bare rock and sand. Due to the remote location of the WSA, difficulty of access, lack of demand (no known harvest), and general absence of trees, forest resources are not significant in the WSA.

Livestock and Wild Horses/Burros

This WSA includes parts of three BLM grazing allotments. Two of these allotments (Burr Point and Hanksville) are unsuitable for grazing due to slickrock topography and low forage production. Robbers Roost is approximately 90 percent unsuitable for grazing due to topography; however, 4,460 acres within that allotment are suitable. That allotment has an estimated 128 AUMs of livestock forage within the WSA (refer to Table 5).

TABLE 5
Livestock Grazing Use Data

	Allotments		
	Robbers Roost	Burr Point	Hanksville
Permittees	1	8	6
Period of Use	Yearlong	9/1 to 5/31	9/1 to 5/31
Class of Allotment	Cattle	Cattle/Sheep	Cattle/Sheep
Area in WSA			
Estimated Available AUMs in WSA	128	0	0

Source: USDI, BLM, 1982c.

There are no existing or proposed rangeland improvements in the WSA. No areas have been identified as having vegetation manipulation potential to increase AUMs. The estimated 128 AUMs of livestock forage now permitted represent 1 percent of the total AUMs in the allotments involved.

No wild horses or burros have been sighted within the WSA. Feral goats have been sighted in Burr Point Allotment. Census data concerning distribution or migration patterns in this WSA are not available for these animals.

Visual Resources

Scenic quality is outstanding throughout the WSA. Sheer Navajo Sandstone cliffs, colorful rock formations, highly eroded side canyons, riparian vegetation along the Dirty Devil River slickrock outcrops, and unique erosional patterns all contribute to the strong visual character of the area.

The area is not visible from any highway travel routes, but is visible from a major hiking route along the Dirty Devil River and from scenic overlooks at Angels Point and Burr Point. Both overlooks are accessible by dirt road.

The BLM Visual Resource Evaluation System rated the WSA's visual characteristics as shown in Table 6. (Appendix 7 explains BLM's VRM system.)

TABLE 6
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	58,440	96
Class B	0	0
Class C	2,560	4
Management Class		
Class I	0	0
Class II	58,440	96
Class III	0	0
Class IV	2,560	4

Source: USDI, BLM, 1982c.

Cultural Resources

Four lithic scatters and two petroglyph panels have been recorded in the WSA. In addition, several rock art sites consisting of Barrier Canyon (a unique rock art style largely confined to the

Horseshoe Canyon [South] WSA and the Horseshoe Canyon Detached Unit of Canyonlands National Park) and Glen Canyon figures are known to occur within the WSA. However, this WSA has not been extensively inventoried, and the number and nature of any other sites are undetermined. No large habitation sites are thought to be within the boundaries, but there may be a number of sites such as granaries campsites, or chipping stations.

Historically, the area is associated with Butch Cassidy and the Wild Bunch. Robbers Roost Canyon served as a major hideout on the famous Outlaw Trail.

There are no sites in the WSA listed on the National Register of Historic Places. However, several sites do possess qualities that make them eligible for nomination to the National Register. It is probable that additional sites would be found that could be eligible for nomination to the National Register.

Recreation

Fifteen recreational opportunities (backpacking, camping, dayhiking, fishing, horseback riding, hunting, nature study, photography, rock climbing, rock hounding, skiing; also, archaeological, geological, wildlife, and scenic sightseeing) were evaluated for their quality in this WSA. Fourteen opportunities, all but skiing, were present in varying degrees. Eight opportunities were considered outstanding in quality; these include backpacking, camping, horseback riding, nature study, photography; and archaeological, geological, and scenic sightseeing. The remaining six activities are of average or lower quality. Three of these activities (i.e., dayhiking, hunting, and wildlife sightseeing) are fair to average. Fishing (nonexistent), rockclimbing, and rockhounding are considered poor.

Overnight backpacking and camping opportunities are considered excellent due to the large size of the area and the diversity of natural features present. Trips of up to a week or more in duration and 50 miles in length are possible; numerous side canyons add interest and variety and allow for general exploring.

The main canyon of the Dirty Devil River is ideally suited for horseback trips. Quality dayhiking areas are present but a lack of easy access points restricts opportunities. Activities such as photography, nature study, and sightseeing are en-

hanced by the colorful rock formations, riparian habitat along the Dirty Devil River, and the presence of cultural sites.

One other activity, river running, is possible on a seasonal basis when water flow conditions are high. While no data on participation in this activity are collected, it is believed that rafting use is slight (up to 20 parties per year). The Dirty Devil River from Lake Powell to Highway U-24 is a Nationwide Rivers Inventory segment. Thus, it is eligible for study for addition to the Nationwide Wild and Scenic Rivers System (USDI, NPS, 1982). The inventory found that this segment of the river (including the WSA portion) possesses remarkably outstanding scenic, geologic, wildlife, and cultural values. (Since it is an inventory-listed segment, the BLM, must as a part of its environmental review process, avoid or mitigate adverse impacts to the river and consult with the NPS before taking any action which could foreclose wild, scenic, or recreational river status [CEQ, 1980]).

Even though there are 18 miles of vehicular ways within the WSA, they are in a 58,440-acre portion of the WSA presently closed to ORV use. There is little ORV use in the remainder of the WSA due to topographic restraints.

Present total recreation use is estimated at approximately 125 visitor days a year. The area is also used by organized outdoor groups for extended trips on an irregular basis and by commercial outfitters. The magnitude of commercial use is unknown and is not included in the estimate of visitor use. Commercial use is probably low and related to primitive recreational uses (i.e., backpacking and river-running).

Wilderness Values

SIZE

This WSA contains 61,000 acres. It extends along the Dirty Devil River for approximately 19 miles (northwest to southeast) and is up to 10 miles wide. The boundary encompasses several side canyons, thus creating a highly irregular border (refer to Map 1).

NATURALNESS

All of the Dirty Devil WSA is in a natural condition. Although there are approximately 18 miles of post-FLPMA roads (vehicular ways) with numerous drill pad sites in the southern end of the WSA along the Dirty Devil River and in Sams Mesa Box and Twin Corral Canyons, these disturbances

were assessed as being substantially unnoticeable. However, these disturbances are noticeable from the air, Burr Point, and other selected locations but are not visible from the Dirty Devil River and are in the process of natural rehabilitation. Another 12-mile post-FLPMA road (constructed by Cotter Corporation in 1979-80) in the Bull Pasture area is successfully rehabilitating by natural and artificial means and is substantially unnoticeable. Therefore, the entire 61,000-acre WSA is free of substantially noticeable intrusions. Because of intrusions and evidence of human use, though substantially unnoticeable, none of the WSA could be called pristine.

SOLITUDE

This WSA's large size contributes spatial screening to opportunities for solitude. It contains numerous deep (300 to 800 feet), steep-walled, twisting canyons that offer outstanding topographic screening. On mesas where topography is relatively flat and vegetation is limited to low-growing grasses, shrubs, and few scattered trees, opportunities for solitude are less than outstanding. There are no outside sights and sounds that would detract from solitude. The low recreational use of the area enhances opportunities for solitude. The overall quality for solitude meets the standards set by the *Wilderness Act* on 49,000 acres. Opportunities on the remaining 12,000 acres do not meet the standards.

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, recreational opportunities present, and an evaluation of the quality of these opportunities. As discussed in the Affected Environment, Recreation section, the Dirty Devil WSA has diverse recreational opportunities, many of which are of outstanding quality. These opportunities include hiking, backpacking, horseback riding, photography, camping; also, geological, archaeological, and scenic sightseeing. Numerous travel/hiking routes (totaling over 100 miles) allow for extended trips. There are many camping opportunities in the canyons where rock overhangs offer shelter. The slickrock areas offer excellent, colorful sightseeing and photography opportunities. Present recreational use is low due to the remote location and limited accessibility.

Overall, the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980) found that opportunities for primitive and unconfined recreation meet the

standards set by the *Wilderness Act* on 49,000 acres and did not meet the standards on 12,000 acres.

SPECIAL FEATURES

Several special features are found in the WSA: the beaver colonies in Beaver Wash Canyon have constructed dams from desert woody plants (i.e., pinyon-juniper, sagebrush, etc.); deposits of petrified wood occur in several canyons; rock art is found in Robbers Roost Canyon; and generally spectacular canyon scenery, with ephemeral waterfalls, is present throughout the WSA. Robbers Roost Canyon is reputed to have been one of the major hideouts of the famous outlaw, Butch Cassidy. The diversity and uniqueness of these features give the WSA exceptional special features.

Land Use Plans and Controls

There are no private in-holdings, rights-of-way, or private subsurface rights within the WSA. However, there are four State sections within the WSA and an additional adjacent 14 State sections. The management philosophy for all State sections is to maximize economic returns for the State School Fund. All State sections are under lease for oil, gas, and grazing. Except for minor amounts of livestock grazing, no activities are presently occurring on these sections.

The WSA is entirely within Wayne County. The *Final Report, Wayne County Master Planning Project* (Call Engineering, 1976) does not identify recommendations at specific locations. The plan recognizes that "... outstanding natural landmarks should be preserved as much as possible." However, it also states that "Open spaces should be used for many purposes rather than strictly as wilderness areas."

The WSA is managed under the BLM Henry Mountain Planning Area MFP which allows multiple use with certain restrictions on surface occupancy for oil and gas, ORV use, and closure of a large area to harvest of forest products as described in the No Action Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Socioeconomics

DEMOGRAPHICS

The WSA lies within the boundaries of Wayne County, one of Utah's least populated and most

rural counties. In 1980, the Wayne County population was 1,911, reflecting a population density of 0.77 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1983, and University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Hanksville, a small community of approximately 351 people, located about 11 road miles to the west. The boundary of the WSA is within 5 miles of Hanksville.

EMPLOYMENT

Wayne County is one of the poorest counties in the State of Utah (South et al., 1983). Government employment represents the largest employment sector within the county, with agriculture a close second and a dominant economic activity of the area. Nonfarm proprietors represent the third largest sector of county employment (refer to Table 7). The county has some tourism and lumber activities; however, the principal commercial center is Richfield, Utah, located in Sevier County (South et al., 1983). Green River, about 76 road miles north of the WSA in Emery County, is a main gateway and service area for visitors to the Dirty Devil area.

TABLE 7
1980 Employment
Wayne County, Utah

Industrial Sector	Number	Percent
Agriculture	191	25
Mining	9	1
Construction	84	11
Manufacturing	37	5
Transportation, Communication, and Utilities	3	---
Wholesale and Retail Trade	42	5
Finance, Insurance and Real Estate	12	2
Services	31	
Government	207	27
Nonfarm Proprietors	152	20
Total	768	100

Sources: Utah Department of Employment Security, 1982, and USDC, Bureau of Economic Analysis, 1982.

INCOME AND REVENUES

In 1980, the nonfarm industry sector in Wayne County produced nearly 89 percent or \$7.3 million of total labor and proprietors' income within the county. This represented an annual growth rate of 17.4 percent between 1975 and 1980, higher than the 13.9-percent growth rate experienced by the State (refer to Table 8). Within this total income, the private sector produced 72 percent of these earnings (mainly from mining and construction) and the government sector produced 28 percent. Farm labor and proprietors' income totaled \$0.9 million or 11.1 percent of total personal earnings (University of Utah, Bureau of Economic and Business Review, 1982).

TABLE 8
1980 Employment Income and Earnings
Garfield County, Utah

Type/Source	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietor's Income (Earnings)	8,245	17.5
Total Labor and Proprietor's Income by Industry Source		
Farm	917	16.6
Nonfarm	7,328	17.4
Private	5,268	22.7
Agricultural	81	(D)
Service and Other		
Mining	(D)	(D)
Construction	(D)	(D)
Manufacturing	291	4.1
Transportation and Public Utilities	183	0.9
Wholesale Trade	69	1.8
Retail Trade	496	3.4
Finance, Insurance and Real Estate	(D)	(D)
Services	416	11.1
Government	2,060	8.2

Sources: USDC, Bureau of Economic Analysis, 1982, and University of Utah, Bureau of Economic and Business Review, 1982.

(D) Not shown to avoid disclosure of confidential information or for items \$50,000 or less. Data are included in totals.

Economic-related activities in the WSA include mineral exploration, mineral production, livestock production, and recreation. Table 9 summarizes local income (sales) and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 9
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	None	\$105,000
Mining Claim Assessment	Less than \$87,300	0
Livestock Grazing	\$2,560	\$179.20
Recreational Use	Less than \$512.50	Unknown
Total	Less than \$93,445.50	Up to \$105,179.20

Sources: BLM Files; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

The WSA has 873 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Only a portion of the claims are current in assessment work. Occasional geophysical exploration has been conducted in the WSA and has generated some temporary local employment and income. No exploration activities are presently occurring in the WSA.

One livestock operator has a total grazing privilege of 128 AUMs within the WSA. If all this forage were utilized, it would account for \$2,560 of livestock sales and \$640 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use is low, and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses, except to the commercial outfitters who use the WSA. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Dirty Devil WSA is estimated as about 125 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Wayne County.

The WSA generates Federal revenues from mineral leases and claims, livestock, and recreation (refer to Table 9).

Oil and gas leases in the WSA cover approximately 35,000 acres. At up to \$3 per acre, lease rental fees generate up to \$105,000 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittee in the WSA can use up to 128 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$179.20 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

An unknown number of user day permits per year are issued for commercial use. Federal permit fees are \$1.00 per user day. Recreation permits generate a small amount of Federal revenue annually.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as discussed in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and tar sand exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is unknown but would probably be relatively low due to the WSA's rough terrain and low resource potential. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: tar sand, 14 acres; oil and gas, 160 acres; and uranium and copper, 20 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If tar sand is developed in the Tar Sand Triangle STSA, air quality could be reduced up to the PSD Class II limitations; however, the proximity of the WSA to Canyonlands National Park may result in restriction of tar sand development to meet PSD Class I limitations. Disturbance of 194 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because surface disturbances associated with locatable minerals (i.e., uranium and copper), oil and gas, and tar sand (in-situ) exploration and development activities would probably not exceed 194 acres (0.32 percent of the WSA). This would not significantly affect geology.

SOILS

Surface disturbance from mineral exploration and development would leave the soil susceptible to increased erosion on up to 194 acres. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 194 acres would increase from 524 cubic yards/year to 1,048 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual soil loss from surface disturbance in the WSA would increase an

estimated 524 cubic yards (0.38-percent increase over current annual soil loss). This is a small increase and the effects would likely be imperceptible.

VEGETATION

The anticipated maximum of 194 acres (0.32 percent of the WSA) disturbed would not significantly impact the WSA's sparse vegetation on 61,000 acres. Under this alternative, protection and restoration of vegetation would be provided through management under the Henry Mountain Planning Area MFP.

WATER RESOURCES

No significant sedimentation or change in TDS is expected to occur from the estimated 524 cubic yards of annual soil loss from surface disturbance on up to 194 acres. Mitigation would reduce sediment yield to even lower levels over time. Opportunities for improvement of existing springs/seeps could occur as allowed in the current MFP for the Henry Mountain Planning Area. None are presently planned for the WSA.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water. The water requirement for a 70,000 barrels per day (BPD) tar sand industry in the Tar Sand Triangle STSA would be 11,079 acre-feet/year for 130 years (USDI, NPS and BLM, 1984). That portion under lease conversion application covers 20 acres (approximately 0.03 percent of the STSA) and under this alternative could be developed. Development of ground water could occur within the WSA to help meet water requirements for tar sand production on the WSA or on adjacent areas. In-situ tar sand injection activities within the WSA and on adjacent areas could lower quality of ground water within the WSA.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Oil and gas could be explored and developed on 9,020 acres subject to Category 1 lease stipulations and on 50,540 acres subject to Category 2 stipulations. Oil and gas exploration and development would not be affected by the adoption of this alternative. The potential deposits within the WSA are 10 million barrels of oil in-place (3 million estimated recoverable) or less than 60 billion

cubic feet of natural gas (18 billion cubic feet estimated recoverable). Approximately 160 acres of surface disturbance could take place within the WSA if exploration and development were to occur. However, due to the small size of these deposits and unfavorable geology, production is not expected under this alternative.

Tar Sand

The tar sand resources on 20 acres in the Dirty Devil WSA, with less than 165,000 barrels of oil (bitumen) in-place and 49,500 barrels that could be recoverable, are under lease conversion application. This could be explored and potentially developed in the future and would not be affected by this alternative. However, the potential for the tar sand resource on the 20 acres in the WSA is low, and development is not expected.

Locatable Minerals

Locatable mineral development could occur within the WSA. About 59,560 acres in the WSA would remain open to mineral leasing and sale, while 1,440 acres in Beaver Wash Canyon would remain closed.

Potential in-place deposits of up to 50,000 tons of copper and up to 500 tons of uranium oxide could be explored and developed. Approximately 20 acres could be disturbed due to exploration and development of these locatable mineral resources. However, the likelihood of economic extraction of locatable mineral development is thought to be minimal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Under this alternative, wildlife could be positively affected in the future by increasing the availability of water through the construction of water catchments, reservoirs, and the improvement and maintenance of springs. No developments are currently planned.

Bighorn sheep may periodically migrate into the area. However, disturbance of an estimated 194 acres (0.32 percent of the WSA) through mineral and energy exploration and development would disrupt wildlife. Deer, pronghorn antelope and mobile nongame animals would be dispersed from the area for the lifetime of these activities. Desert bighorn sheep would avoid the area. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Bell's vireo and golden eagle would also avoid the disturbed area.

FOREST RESOURCES

Since there are few trees other than scattered pinyon and juniper, none of which are utilized (except by occasional campers or hikers), and since minimal surface-disturbing activities are anticipated (0.32 percent of the WSA), no significant loss or harvest of forest resources is expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 128 AUMs currently allocated in the WSA are controlled by one livestock permittee. There are no existing or proposed rangeland improvements in the WSA, but additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA, few, if any, changes in livestock management techniques are expected. Mineral-related disturbance could result in short-term loss of livestock forage.

VISUAL RESOURCES

Scenic values in the area would continue to be managed under VRM Class II guidelines, which state that management activities should not visually attract observers' attention and changes should be designed to maintain the natural landscape's shape, size, and color. Most surface-disturbing activities would exceed these objectives, at least until rehabilitation of affected areas was complete (USDI, BLM, 1981a).

Scenic values in areas affected by an estimated 194 acres of surface disturbance could be degraded, and VRM Class II objectives would not be met. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. Class II VRM objectives would probably not be met during the short term and, even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole.

CULTURAL RESOURCES

There would be little or no impact to cultural resources resulting from implementation of this

alternative. Disturbance could occur and sites could be lost or damaged on up to 194 acres (0.32 percent of the WSA) by mineral and energy exploration and development in wilderness areas; however, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance and would mitigate any adverse impacts. Inadvertent loss or damage to cultural resources could occur; however, these impacts are expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population increase.

RECREATION

Primitive recreation values (hiking, camping, sight-seeing, etc.) could be lost or impaired in areas affected by mineral and energy exploration and development. The estimated 194 acres of surface disturbance that could occur would degrade naturalness, solitude, and scenic values in localized areas including areas along the Dirty Devil River, a Nationwide Rivers Inventory listed segment. The beaver colonies and wildlife observation values in Beaver Canyon would be protected by an ACEC designation.

The future trend in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor and Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate, overall recreational use is expected to increase from 125 current visitor days per year to 186 at the end of 20 years. Overflow from Canyonlands National Park and Glen Canyon National Recreation Area (NRA) could further increase use. In addition, if tar sand development occurs and the road into the Tar Sand Triangle STSA is paved, recreational use in the vicinity of the WSA could increase by as much as 950 percent (USDI, NPS and BLM, 1984). However, the amount of this increase within the WSA cannot be predicted because the WSA is several miles from the potential new access.

Approximately 18 miles of vehicular ways would continue to be closed to ORV use, along with 96 percent of the WSA. If roads, vehicular ways, and drill pads for leases and valid claims are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral exploration and development would improve access into the area for non-primitive recreation.

WILDERNESS VALUES

None of the WSA would be designated as wilderness. Management of the area would be under the current BLM Henry Mountain Planning Area MFP. Wilderness characteristics in the WSA would be protected by some limitations placed on potential surface-disturbing activities. With 59,560 acres of the area open to mineral entry and oil and gas exploration and development, an estimated 194 acres (0.32 percent of the WSA) could be subject to surface disturbance.

The related surface disturbance would result in a significant loss of naturalness, solitude, and outstanding opportunities for primitive, unconfined recreation throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis). The potential for mineral development and related disturbance is low in this WSA.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the Wayne County Master Plan which recommends "many uses [for] open spaces." This alternative (No Action) is based on implementation of the current BLM Henry Mountain Planning Area MFP and is therefore in conformance with it. The MFP has been reviewed by the Governor, and has been found to be consistent with the plans of the State of Utah. The No Action Alternative would also be consistent with the State of Utah policy of emphasizing economic return from State School lands.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the oil and gas, tar sand, and other minerals in the WSA were developed, it would lead to increases in employment and income for Wayne and possibly Emery Counties. However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (128 AUMs) and ability to maintain, replace, and build new range improvements would remain as at

present. The forage use in the allotment would continue to produce \$2,560 annually in livestock sales and \$640 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent or greater per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is presently only about 125 visitor days per year and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely remain insignificant to the local economy.

Surface-impacting activities that would be allowed without designation could reduce the demand for commercial outfitter services now offered in the area. Decreased demand would be significant to the commercial outfitters who use the WSA but would be insignificant in terms of the local economy and other individual businesses.

Federal and State revenues would not be reduced by this alternative. The 35,000 acres currently under oil and gas lease could continue to generate up to \$105,000 annually in Federal revenues. There are 26,000 acres in the WSA open to leases that are currently not leased. If leased, they would bring up to \$78,000 additional Federal lease fee revenues per year in addition to new royalties if oil and gas were produced. Half of these monies would be allocated to the State, a portion of which could reach the local economy.

Collection of livestock grazing fees (\$179.20 per year) would continue. About 50 percent of the grazing fees would continue to be returned to the local BLM office for use in range improvement projects. Commercial recreation permits would continue to produce an undetermined amount of Federal fee revenues. Overall, there could be an increase in Federal oil and gas and recreation permit fee revenues of more than \$78,000 per year under this alternative.

All Wilderness Alternative (61,000 Acres) (Proposed Action)

As identified in the Description of the Alternatives section, the major changes that could occur in the 61,000-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would

be placed in leasing Category 4 (closed to leasing). About 18 miles of existing vehicular ways would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that mining claims could eventually be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities and that tar sand conversion areas would be either converted with the stipulation of no surface occupancy or denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA.

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (20 vs. 194 acres) and because tar sand development could occur adjacent to the WSA with either of the alternatives, the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

WATER RESOURCES

No water improvements exist or are planned within the WSA. Future improvements of existing springs for livestock, desert bighorn sheep, or other purposes could occur if this were compatible with preservation of wilderness values. However, restrictions to protect wilderness values could prevent the development of some springs.

Mineral exploration and development is generally confined at or near the surface or with widely spaced wells and would not significantly impact ground water. The water requirement for a 70,000-BPD tar sand industry to extract the tar sand from the entire Tar Sand Triangle STSA is estimated to be 11,079 acre-feet/year for 130 years (USDI, NPS and BLM, 1984). That portion of the WSA under lease conversion application covers 20 acres (approximately 0.02 percent of the STSA) and under this alternative would not be developed. Potential for development of ground

water within the WSA to help meet water requirements for production on adjacent areas would be foregone. In-situ tar sand development in areas adjacent to the WSA could, over time, lower quality of the ground water in this WSA. However, under this alternative water quality would remain better for a longer period of time in areas where the aquifer would not be injected directly. Lower quality water would have to migrate from distant injection activities (USDI, NPS, and BLM, 1984). The time for ground water contamination to occur through migration cannot be determined.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 35,000 acres (20,000 acres are pre-FLPMA and 15,000 acres are post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

If the area were designated wilderness it would be placed in a Category 4 status (no leasing) with no new leasing. However, pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing.

It is concluded that the exploration for and development of a potential resource of up to 10 million barrels of oil in-place (3 million recoverable) and 60 billion cubic feet of natural gas (18 billion recoverable) would be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of recoverable oil and gas.

Tar Sand

No production of oil from tar sand is presently taking place within the WSA. It should be noted that SAI (1982) evaluated the Dirty Devil WSA and the French Spring-Happy Canyon WSA as one unit. Although the tar sand resource for this unit shows a favorability rating of f4/c4, the source potential in the Dirty Devil WSA is actually low to none because of the position of the WSA relative to the Tar Sand Triangle STSA. Approximately 20 acres of the WSA are part of the Tar Sand Triangle STSA and are under lease conversion application. If this lease is not converted to a combined hydrocarbon lease, it will be phased out. If it is converted to a combined hydrocarbon lease it would contain a no surface occupancy stipula-

tion that would apply if the WSA were designated as wilderness. Therefore, no production of oil from tar sand is anticipated in this portion of the Tar Sand Triangle STSA under this alternative.

The potential for development of 20 acres of tar sand with about 49,500 barrels of recoverable oil would be foregone. However, the potential for this resource is low within the WSA, and the likelihood for development is thought to be minimal, even if the WSA were not designated as wilderness.

Locatable Minerals

Approximately 18,000 acres are under mining claim within the WSA, principally for uranium.

Less than 50,000 tons of copper metal and less than 500 tons of uranium oxide are estimated to potentially occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. After that date, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b; USDI, NPS and BLM, 1984). It is estimated that, if minerals are located prior to designation, approximately 20 acres could be disturbed due to exploration of the locatable mineral resources, primarily uranium.

The worst-case impact to minerals would be if the recoverable minerals are not within mining claims filed before designation. In that case, the potential for recovery of up to 50,000 tons of copper and 500 tons of uranium oxide would be foregone. However, locatable minerals are not currently produced in the WSA due to economic considerations (e.g., transportation, low potential, etc.) and it is unlikely that exploration or development will occur even without wilderness designation. Therefore, it is concluded that this alternative would not result in any significant loss of recoverable uranium and copper resources.

WILDLIFE

Some wildlife would benefit from this alternative due to the preservation of solitude. However, water could be a limiting factor. Even though no water developments are planned, if springs are not improved at various locations in the WSA because of restrictions for protection of wilderness values, the distribution of wildlife will continue to be confined to the Dirty Devil River and Beaver Wash Canyons. Bighorn sheep may not migrate into the WSA without spring develop-

ments. However, even with spring developments, their presence may be periodic.

About 20 acres could be disturbed due to mineral exploration and development. This could disrupt some wildlife populations in the affected areas and result in these species leaving such localized areas. Less mobile wildlife would either perish or co-exist with the disturbances at smaller and less viable population levels.

The occasional presence of Bell's vireo and gold eagle would remain the same in much of the WSA except in those 20 acres of mineral exploration and development, where these species would leave the area.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 128 AUMs currently allocated in the WSA are controlled by one livestock permittee. There are no existing or proposed rangeland improvements in the WSA and there are no areas identified as having potential for increased forage through vegetation manipulation. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, development of future roads or other livestock management facilities for use with the 128 AUMs in the WSA could be restricted to preserve wilderness values. Because no improvements have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected. Wilderness designation could reduce short-term loss of livestock forage due to mineral and energy exploration and development.

Due to the remoteness, rough terrain, topography, and difficult access, very little use of motorized vehicles is currently taking place to manage livestock. Therefore, little effect on the management of livestock grazing is expected.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I which generally allows for only natural ecological change, through continuation of the ORV closure, and through closure of the entire area to future mineral leasing and location.

Under this alternative, surface disturbance would be reduced from the 194 acres projected for the No Action Alternative to 20 acres, which would be associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. Because the potential disturbance is only 20 acres and the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

Approximately 20 acres (0.032 percent of WSA) could be disturbed by mineral exploration and development in the wilderness area, but inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance and would mitigate any adverse impacts. Inadvertent loss or damage to cultural resources could occur; however, these impacts are expected to be minimal.

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Overall, recreation would benefit from this alternative. Although visitor use is currently low, the area has excellent opportunities for primitive recreation, including extended hiking, camping, and horseback trips. These recreation opportunities would be preserved by designation because surface-disturbing activities would be reduced to approximately 20 acres. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in

primitive recreational use above the baseline rate as would the WSA's proximity to Glen Canyon NRA and Canyonlands National Park.

In addition, if tar sand development occurs and the road into the northern portion of the Tar Sand Triangle STSA is paved, recreational use in the area could increase by as much as 950 percent in the vicinity of the WSA due to improved access (USDI, NPS and BLM, 1984). The increase in use within the Dirty Devil WSA cannot be predicted because the WSA is several miles from the potential new access. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use and the quality of the primitive recreation experience would probably not be negatively affected by the increased use.

There would be little or no change in ORV use because 96 percent of the WSA is presently closed to ORV use. Commercial outfitting based on primitive recreation would benefit, and recreation use could increase if other primitive commercial operators applied for use of the WSA. Little impact on ORV recreational use would be expected due to the general lack of such activity in the area. About 96 percent of the WSA, including 18 miles of vehicular ways, is presently closed to ORV use.

It is concluded that this alternative could benefit recreation by reducing the likelihood of surface-disturbing activities and increasing management's recognition of and attention to recreational values.

WILDERNESS VALUES

Designation as wilderness and management of all 61,000 acres would contribute to the preservation of the wilderness characteristics of size, naturalness, outstanding opportunities for solitude and primitive and unconfined recreation, and special features (i.e., beaver colonies in Beaver Wash Canyon, petrified wood deposits, geologic formations, scenery, rock art, etc.). Although recreational use could increase substantially (refer to Recreation section), use relative to the size of the area would be low. Solitude (outstanding on 49,000 acres), primitive recreation (outstanding on 49,000 acres), special features, and naturalness would be preserved except in localized areas affected by an estimated 20 acres of surface disturbance related to mineral exploration and development. No significant impact to the WSA as a whole would be expected because the potentially disturbed acreage is small and development

of claims under this alternative is unlikely. If tar sand production is allowed in parts of the Tar Sand Triangle STSA near the Dirty Devil WSA outside sights and sounds would reduce wilderness values in the WSA.

LAND USE PLANS AND CONTROLS

The existing BLM Henry Mountain Planning Area MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Henry Mountain MFP.

The Wayne County Master Plan recommends multiple use of all public lands in the county. Wilderness designation would generally be consistent with the multiple-use concept because most resource uses would continue, although under more restrictive conditions. This alternative would conflict with the county's multiple-use concept because restrictive conditions would be placed on mineral development and oil and gas leases would be phased out. If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 9) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative. The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$2,560 of livestock sales and \$640 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increased rancher income. No such potential range improvements have been proposed.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would only be significant to the commercial outfitters now using the WSA and those that may begin using the WSA.

The loss of 35,000 acres now leased for oil and

gas would cause an eventual loss of up to \$105,000 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$78,000 annually in Federal revenues from the 26,000 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

An estimated annual \$179.20 of Federal grazing fee revenues would continue.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. The number of commercial outfitters using the WSA is unknown, but designation could lead to more commercial recreational use in the WSA.

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Horseshoe Canyon (South) WSA



HORSESHOE CANYON (SOUTH) WSA

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HORSESHOE CANYON (SOUTH) WSA (UT-050-237)

INTRODUCTION

General Description of the Area

The Horseshoe Canyon Wilderness Study Area (WSA) consists of 38,800 acres of public land about 24 miles east of Hanksville in northeastern Wayne County. The WSA is west of Glen Canyon National Recreation Area (NRA). The area contains a series of deep, slickrock canyons separated by sparsely vegetated benches that converge near the Horseshoe Canyon Detached Unit of Canyonlands National Park (contiguous with the WSA).

Summer temperatures can be over 95 degrees Fahrenheit (F) at the bottom of Horseshoe Canyon. Winter temperatures can fall below 0 degrees F. Precipitation averages about 6 inches in the bottom of Horseshoe Canyon to about 10 inches on the higher bench areas.

The WSA is located in the upper end of a canyon approximately 35 miles long, which is potential wilderness for its entire length. There are two management designations for the other portions of the canyon: the Horseshoe Canyon Detached Unit of Canyonlands National Park and the Horseshoe Canyon (North) WSA of the Moab District BLM (UT-060-045). The combined total acreage of the three contiguous areas is almost 62,000 acres. A road on the southern boundary separates this WSA from French Spring-Happy Canyon WSA (UT-050-236B). The Glen Canyon NRA borders portions of the eastern boundary of the WSA.

Specific Issues Identified in Scoping

Several concerns pertaining to the wilderness study process and/or the environmental analysis process were raised during scoping. These concerns are discussed in the Scoping section of Volume I rather than in individual analyses for WSAs.

General issues pertaining to the WSAs in the Henry Mountain Resource Area are discussed in Volume I. Only two specific issues pertaining to the Horseshoe Canyon WSA were identified through formal public scoping (USDI, BLM, 1984d), and these are responded to below.

1. *Comment:* Soil erosion control issues should be analyzed in the Environmental Impact Statement (EIS).

Response: Erosion control problems are addressed in this document. As indicated in

the Affected Environment section, wind erosion is the major problem in this WSA, and erosion control measures have been planned.

2. *Comment:* The oil and gas (mineral) potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be at least moderate. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

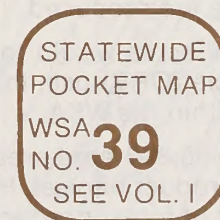
DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

No alternatives other than those analyzed below were raised for this WSA during scoping.

Alternatives Analyzed

Four alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (38,800 acres); (3) Partial Wilderness (36,000 acres); and (4) Partial Wilderness (28,700 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.



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NO ACTION ALTERNATIVE

Under this alternative, none of the 38,800-acre Horseshoe Canyon (South) WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The State land within the WSA has not been identified in the MFP for Federal acquisition through exchange or purchase (refer to Map 1). Refer to Volume I for further information on State in-holdings.

The following are specific actions that would occur under this alternative:

- All 38,800 acres would be managed as oil and gas leasing Category 1 (standard stipulations). The entire area would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on existing mining claims (1,670 acres) and future mining claims.
- About 58 acres of the WSA are part of the Tar Sand Triangle Special Tar Sand Area (STSA) and are involved in lease conversion applications for tar sand development by in-situ methods (USDI, National Park Service [NPS] and BLM, 1984). Under this alternative it is assumed that any wilderness protection stipulations (no surface occupancy) applied to the leases while the area is under wilderness review would be dropped if the area is not designated.
- The present domestic livestock grazing use in the area would continue as authorized in the MFP (1,150 Animal Unit Months [AUMs]). Use and maintenance of three corrals, 2 miles of fence, one reservoir, and six improved springs would continue. New rangeland improvements could be implemented without wilderness considerations. Three reservoirs are proposed for development in this WSA.
- Developments for wildlife, water resources, etc. could be allowed without wilderness consideration if in conformance with the MFP. None are proposed.
- The 38,800 acres would be open to off-road vehicle (ORV) use, including 23 miles of ways within the WSA.
- The entire 38,800-acre area would be open to forest product harvest. However, there is no harvest of forest products at the present time, nor is any planned.

- The area would continue to be managed under Visual Resource Management (VRM) Class II (36,500 acres) and Class III (2,300 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances which threaten human life, property, or high-value resources without concern for wilderness values.
- Activities to gather information would be allowed by permit, provided these were accomplished in an environmentally sound manner.
- Motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

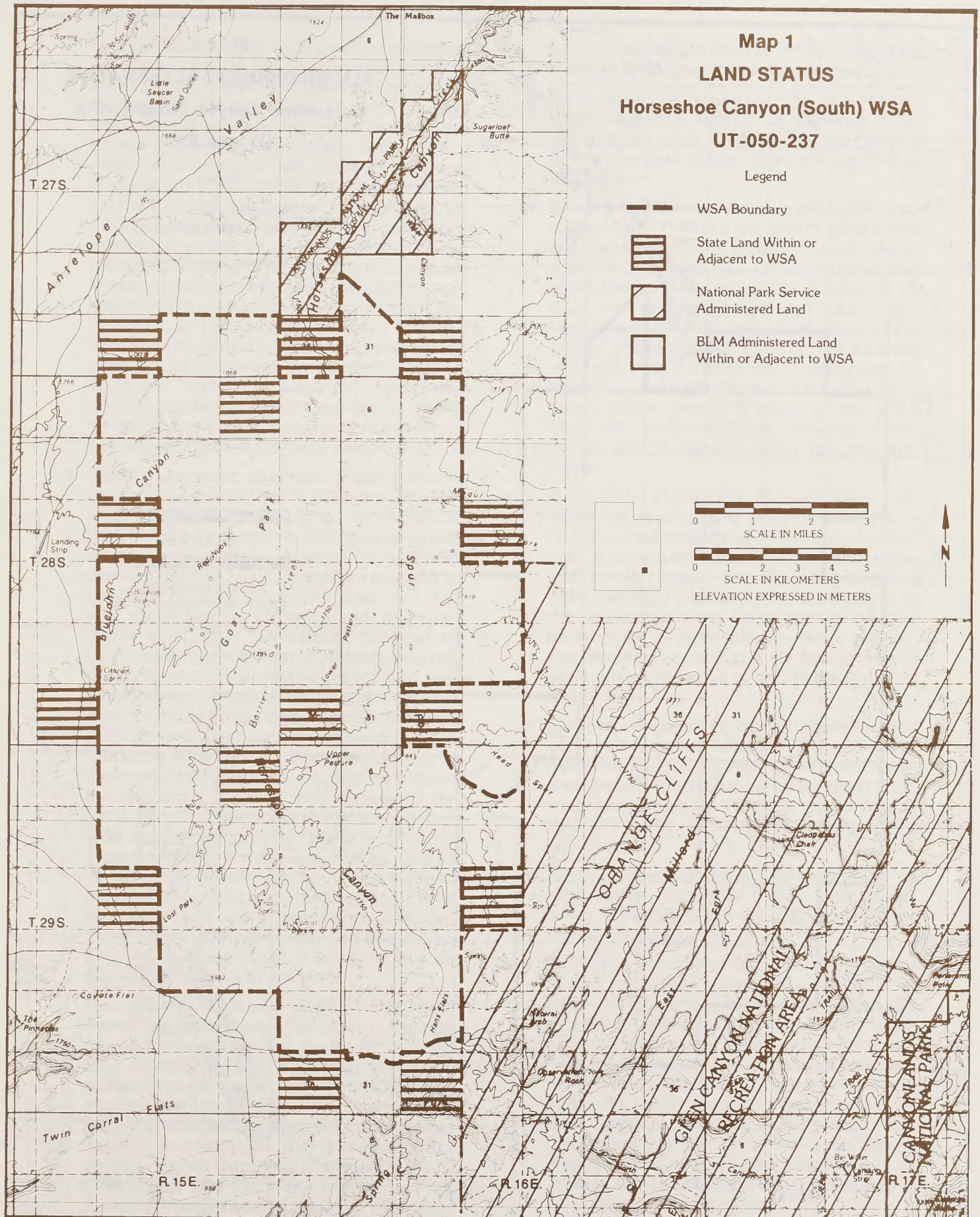
Under the All Wilderness Alternative (refer to Map 2), all 38,800 acres of the Horseshoe Canyon WSA would be designated by an act of Congress as part of the NWPS. It would be managed in accordance with the BLM's "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character.

Upon designation, Federal acquisition of three sections of State land (1,920 acres) within the WSA is likely, and would be authorized by purchase or exchange. Six of eleven State sections adjacent to the WSA would probably be exchanged. It is assumed that wilderness management and resulting impacts on acquired State lands would be the same as those on adjacent Federal lands. Acreage figures and quantities (e.g., AUMs) in this analysis for Federal lands only.

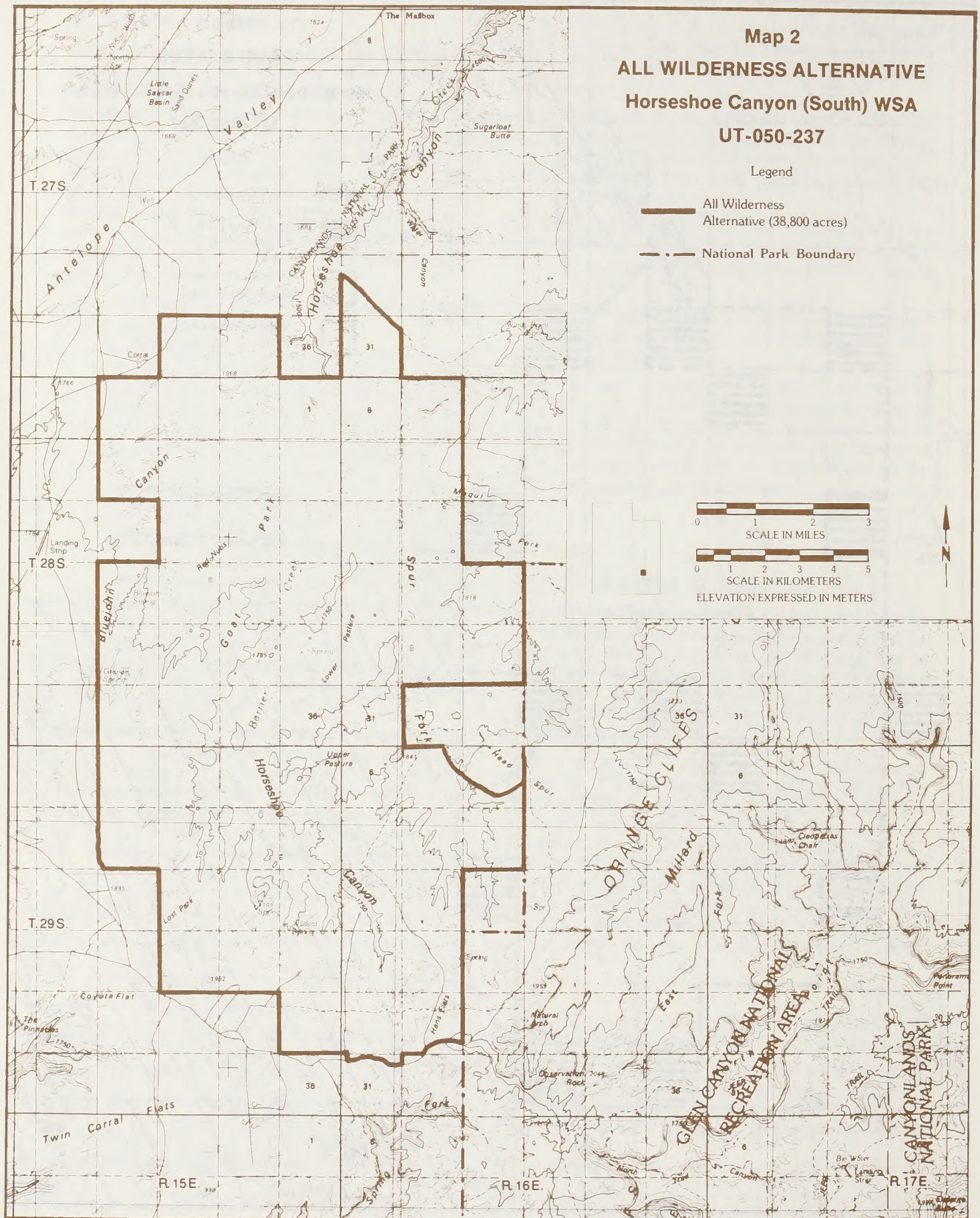
The following are specific actions that would occur under this alternative:

- If the WSA were designated wilderness, all 38,800 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction,

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and patenting would be allowed to continue on that portion of the approximately 1,670 acres of existing mining claims determined to be valid. Development of these claims would be regulated by the undue and unnecessary degradation guidelines with wilderness considerations (43 Code of Federal Regulations [CFR] 3809). After designation, existing oil and gas leases, involving about 31,080 acres, would be phased out upon expiration unless an oil or gas find in commercial quantities is shown or unless leases are converted to combined hydrocarbon (tar sand) leases under provisions of Public Law 97-78. Oil and gas leases converted to combined hydrocarbon leases on 58 acres in the WSA would contain nonimpairment stipulations (no surface occupancy); therefore, under this alternative, tar sand development on the 58 acres could occur only in a manner not degrading to wilderness values.

- Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 1,150 AUMs in the WSA would remain available to livestock as presently allotted. A small herd (10-20 animals) of wild burros would be allowed to continue grazing use in the area. The use and maintenance of rangeland improvements existing at the time of designation could continue in the same manner as in the past, based on practical necessity and reasonableness. Existing rangeland improvements include three corrals, 2 miles of fence, one reservoir, and six developed springs in this WSA. After designation, new rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources as long as certain criteria (refer Appendix 1) are met to adequately protect wilderness values. Three new reservoirs are proposed for development in this WSA. It is assumed that development of these reservoirs would not be allowed under this alternative.
- New water resource improvements or watershed activities not related to rangeland or wildlife management would be allowed after designation only if these enhance wilderness values, correct conditions presenting imminent hazard to life or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). Except for the reservoirs and springs already mentioned, no water resource

improvements are located in the Horseshoe Canyon WSA, and none are planned.

- New wildlife transplants or habitat improvements would be allowed after designation only if these are compatible with wilderness values. None are planned in this WSA.
- The entire WSA would be closed to ORV use except for: (1) those users with valid existing rights if approved by BLM in accordance with 43 CFR rules ; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland improvements, including those mentioned above. About 23 miles of existing vehicular ways in the WSA would not be available for vehicular use, except as indicated above. About 6 miles of the WSA boundary follow existing unpaved roads, which would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the wilderness area. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along the approximately 6 miles of roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any planned.
- Visual resources would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the area would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.

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- Any activity to gather information about natural resources in the area would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating the offending individuals while at the same time posing the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only under conditions that would ensure minimum disturbance to wilderness values.

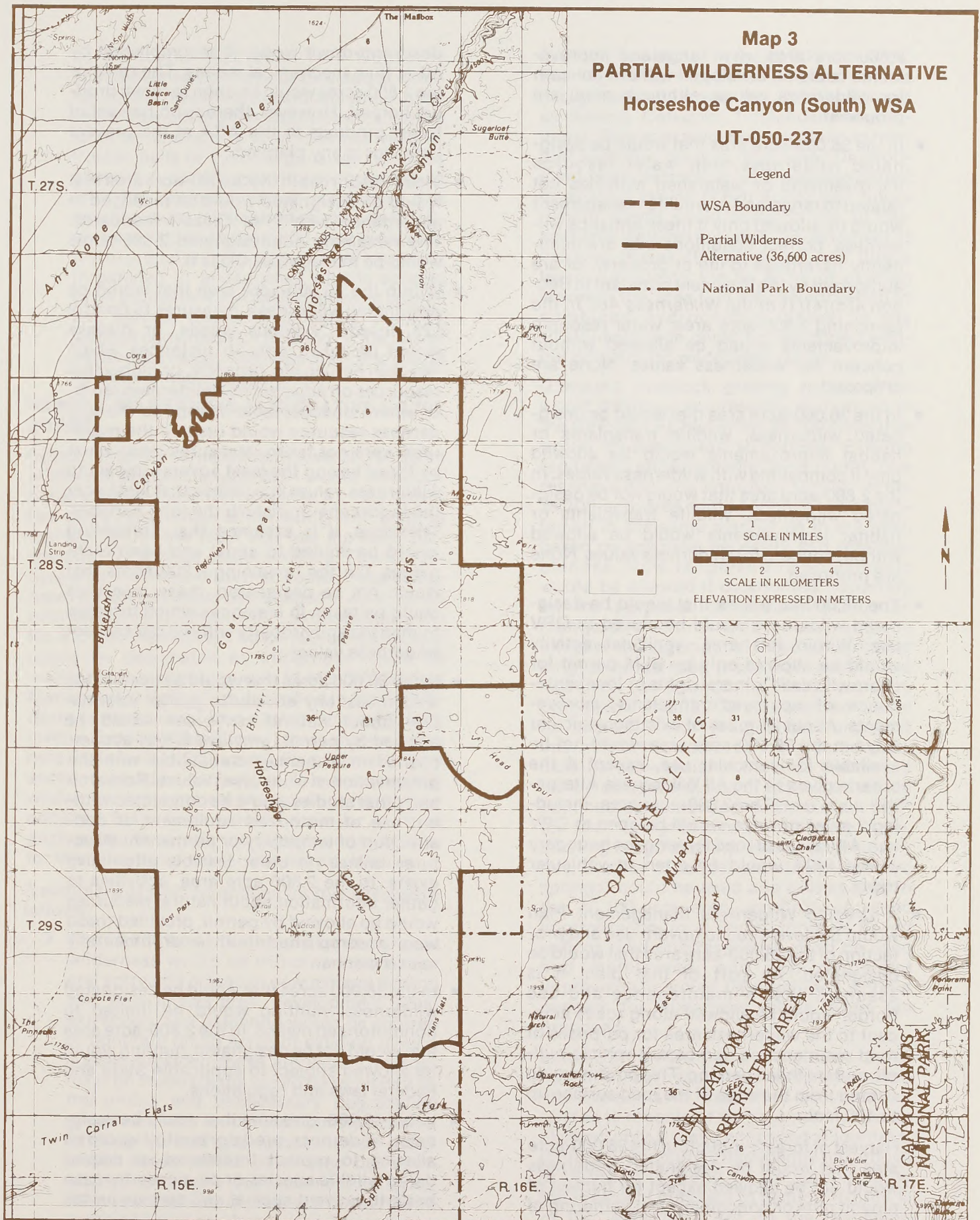
PARTIAL WILDERNESS ALTERNATIVE (36,000 ACRES) (PROPOSED ACTION)

Under this alternative, 36,000 acres of the Horseshoe Canyon WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA that would have the fewest manageability problems. The area that would not be designated is in proximity to heavily used roads and corrals; also, this area has low-quality wilderness values. The 2,800-acre area that would not be designated as wilderness would be managed in accordance with the Henry Mountain MFP as described for the No Action Alternative. The 36,000-acre area that would be designated as wilderness would be managed in accordance with the BLM's "Wilderness Management Policy," as described in the All Wilderness Alternative. Upon designation, Federal acquisition of three sections of State land (1,922 acres) within the WSA is likely, and would be authorized by purchase or exchange. Six of ten State sections adjacent to the WSA would be exchanged. Should land transfers be made, it is assumed that impacts on acquired State lands would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only. Refer to Volume I for further information on State in-holdings.

A summary of specific actions for this alternative follows:

- The 36,000 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 36,000-acre area, development work, extraction, and patenting would be allowed to continue on 1,510 acres of existing mining claims, provided these are valid. Development on these claims would be regulated by the undue and unnecessary degradation guidelines with wilderness considerations. The existing oil and gas leases, which cover 28,680 acres, would be phased out upon expiration unless a find in commercial quantities is presented or they are converted to combined hydrocarbon leases. The 58 acres of leases that could be converted to combined hydrocarbon leases occur in the 36,000-acre area that would be designated wilderness. These leases would contain nonimpairment stipulations limiting development to that which could occur in a manner not degrading to wilderness values. The 2,800-acre area that would not be designated would be managed as leasing Category 1 (standard stipulations). This area would remain open to mineral location, leasing, and sale. Development, extraction, and possible patent of existing claims (160 acres) and future mining claims could occur in the 2,800-acre area if claims are valid. Development of existing leases (2,400 acres) and future leases could occur without concern for wilderness values.
- Domestic livestock grazing would continue at present levels (80 AUMs) in the 36,000-acre area that would be designated. Existing rangeland improvements (three corrals, 1 mile of fence, one reservoir, and four improved springs) in the 36,000-acre area could be used and maintained in the same manner as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources as long as wilderness protection criteria are met (refer to Appendix 1). After designation, rangeland improvements would be considered on a case-by-case basis. The three planned reservoirs would not be allowed. In the 2,800 acres that would not be designated as wilderness, use of 1,070 AUMs would continue as authorized in the current MFP for the Henry Mountain Planning Area. Existing rangeland improvements (1 mile of fence and two improved springs) could be used and maintained without wilderness considerations. In the

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2,800-acre area, new rangeland improvements could be developed without concern for wilderness values, although none are proposed.

- In the 36,000-acre area that would be designated wilderness, new water resource improvements or watershed activities not related to rangeland or wildlife management would be allowed only if these enhance wilderness, correct conditions that are imminently hazardous to life or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the remaining 2,800-acre area, water resource improvements would be allowed without concern for wilderness values. None are proposed.
- In the 36,000-acre area that would be designated wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the 2,800-acre area that would not be designated wilderness, wildlife transplants or habitat improvements would be allowed without concern for wilderness values. None are proposed.
- The 36,000-acre area that would be designated wilderness would be closed to ORV use. Within this area, vehicular activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. About 21 miles of existing vehicular ways in the 36,000-acre area would not be available for vehicular use, except if the criteria given in the All Wilderness Alternative were met. The 2,800-acre area, including 2 miles of ways, would be open to ORV use. All 6 miles of road forming the boundary of the WSA would be open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 36,000-acre area that would be designated. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- Harvest of forest products in the 36,000-acre area that would be designated wilderness would not be allowed except for harvest of pinyon nuts or noncommercial gathering of

dead-and-down wood, if accomplished by other than mechanical means. The remaining 2,800 acres would be open to forest product harvest. However, there is no harvest of forest products in the WSA at the present time, nor is any planned.

- Visual resources in the 36,000-acre area that would be designated would be managed in accordance with VRM Class I standards. The remaining nondesignated 2,800 acres would be managed as Class II.
- Within the 36,000-acre area that would be designated wilderness, measures to control fire, insects, noxious weeds, or disease would be taken only in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to aerial and hand techniques. On the remaining 2,800 acres that would not be designated, these measures could be taken in instances which threaten human life and property without concern for wilderness values.
- In the 36,000 acres that would be designated wilderness, any activity to gather information about natural resources would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of wilderness values. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternative exists. In the 2,800 acre area, activities to gather information about natural resources would be allowed by permit, provided these were accomplished in an environmentally sound manner.
- In the 36,000 acres that would be designated wilderness, hunting would be limited to nonmotorized means. In the 2,800-acre area that would not be designated, hunting would be allowed subject to applicable State and Federal laws and regulations.
- In the 36,000-acre area that would be designated wilderness, predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses

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of domestic livestock. This would be accomplished by methods directed at eliminating the offending individuals while at the same time posing the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be allowed. A predator control program would only be approved under conditions that would ensure minimum disturbance to wilderness values. In the 2,800-acre area, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock without consideration given to protection of wilderness values. Methods of control would be determined as appropriate.

PARTIAL WILDERNESS ALTERNATIVE (28,700 ACRES)

In this Partial Wilderness Alternative, 28,700 acres of the Horseshoe Canyon WSA would be designated as wilderness (refer to Map 4). The objective of this alternative is to identify and analyze that portion of the WSA that has the most outstanding wilderness characteristics. The 10,100-acre area within the WSA that would not be designated wilderness would be managed in accordance with the Henry Mountain MFP, as described in the No Action Alternative. The 28,700-acre area that would be designated as wilderness would be managed in accordance with BLM's "Wilderness Management Policy," as described in the All Wilderness Alternative. This alternative would likely involve Federal acquisition of three sections of in held State land (1,280 acres). Five adjacent State sections would be exchanged. It is assumed that wilderness management and resulting impacts on acquired State lands would be similar to those analyzed for Federal lands. Figures and quantities for this alternative are for Federal lands only.

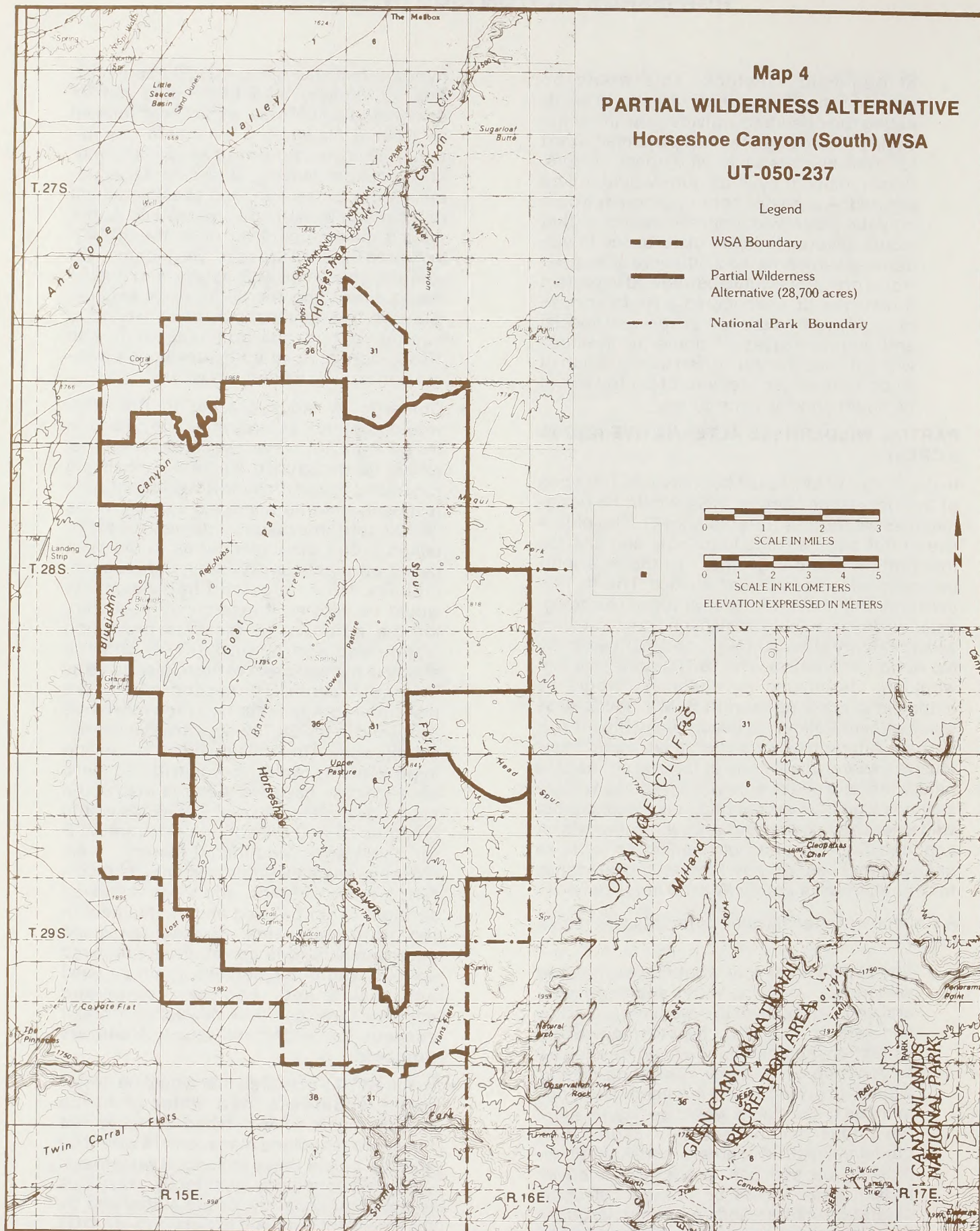
A summary of specific actions for this alternative follows:

- The 28,700 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In this area, development work, extraction, and patenting would be allowed to continue on 50 acres of existing mining claims, provided these are valid. Development on these claims would be regulated by the undue and unnecessary degradation guidelines with wilderness considerations. Existing oil and gas leases, which cover 24,680 acres, would be phased out upon expiration unless a find in commercial quantities is presented or they are converted to combined hydrocarbon leases. There are no leases that may be converted to combined

hydrocarbon leases in the 28,700-acre area. The 10,100-acre area that would not be designated wilderness would be managed as leasing Category 1 (standard stipulations). This area would remain open to mineral location, leasing, and sale. Development work, extraction, and possible patent of existing claims (1,620 acres) and future mining claims could occur in the 10,100-acre area if claims are valid. Development of existing leases (6,400 acres) and future leases (including the 58 acres of existing leases in this area that may be converted to combined hydrocarbon leases) in the 10,100-acre area could be developed without concern for wilderness values.

- Domestic livestock grazing in the WSA would continue as presently authorized in the MFP (821 AUMs) in the 28,700 acres that would be designated wilderness. Existing rangeland improvements (one corral, one reservoir and one improved spring) in the 28,700-acre area could continue to be maintained in the same manner as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources as long as wilderness protection criteria are met (refer to Appendix 1). Three reservoirs proposed in the 28,700-acre area would not be allowed. After designation, rangeland improvements would be considered on a case-by-case basis. In the area that would not be designated, use of 329 AUMs would continue as authorized in the current MFP for the Henry Mountain Planning Area. Existing rangeland improvements (two corrals, 2 miles of fence, and three improved springs) could be used and maintained. In the 10,100-acre area, existing rangeland improvements (one corral, three improved springs, and one reservoir) could be used and maintained, and new rangeland improvements could be developed without concern for wilderness values. None are proposed.
- In the 28,700-acre area that would be designated wilderness, new water resource improvements or watershed activities not related to rangeland management would be allowed only if these enhanced wilderness, corrected conditions imminently hazardous to health or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the remaining

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10,100-acre area, water resource improvements would be allowed without concern for wilderness values. None are proposed.

- In the 28,700 acres that would be designated wilderness, wildlife transplants or habitat improvements would be allowed only if these are compatible with wilderness values. In the 10,100 acres that would not be designated, wildlife transplants or habitat improvements would be allowed without concern for wilderness values.
- The canyons that would comprise the 28,700 acres designated wilderness would be closed to ORV use. Within this area, vehicular activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. This alternative includes approximately 12 of the 23 miles of vehicular ways in the WSA in the proposed wilderness acreage. These 12 miles would not be available for vehicular use after designation, except if the criteria given in the All Wilderness Alternative were met. The 10,100-acre area, including 11 miles of ways, would be open to ORV use. All 6 miles of roads forming the boundary of the WSA would be open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 28,700 acres that would be designated wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- Harvest of forest products in the 28,700 acres that would be designated wilderness would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining 10,100 acres would be open to forest product harvest. However, there is no harvest in the WSA at the present time, nor is any planned.
- Visual resources on the 28,700 acres that would be designated wilderness would be managed in accordance with VRM Class I standards. The remaining 10,100 acres would be managed as Class II (7,800 acres) and Class III (2,300 acres).
- Within the 28,700-acre area, measures to control fire, insects, noxious weeds, or dis-

ease would be allowed only in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse effect on wilderness values. It is assumed that firefighting would be limited to aerial and hand techniques. On the remaining 10,100 acres, these measures could be taken in instances which threaten human life and property without concern for wilderness values.

- In the 28,700 acres that would be designated wilderness, any activity to gather information about natural resources would be allowed by permit, provided it was accomplished in a manner compatible with preservation of wilderness values. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternative exists. In the 10,100-acre area, any activities for the purpose of gathering information about natural resources would be allowed by permit, provided these were accomplished in an environmentally sound manner.
- In the 28,700 acres that would be designated wilderness, hunting would be limited to nonmotorized means. In the nondesignated 10,100 acres, hunting would be allowed subject to applicable State and Federal laws and regulations.
- In the 28,700 acres that would be designated wilderness, predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating the offending individuals while at the same time posing the least possible threat to other animals or to wilderness visitors. Poison baits or cyanide guns would not be allowed in the area that would be designated wilderness. A predator control program would be approved only under conditions that would ensure minimum disturbance to wilderness values. In the 10,100 acres that would not be designated wilderness, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock without concern for wilderness values. Methods of control would be determined as appropriate.

Summary of Environmental Consequences

Table 1 presents the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Unless otherwise indicated, information for this section was taken from the Henry Mountain Planning Area Unit Resource Analysis (USDI, BLM, 1982c) and other BLM technical reports and documents.

Air Quality

This WSA is located in a Prevention of Significant Deterioration (PSD) Class II area as defined in the Clean Air Act, as amended. It is affected little by air pollution and visibility is generally excellent. The WSA is adjacent to the Horseshoe Canyon Detached Unit of Canyonlands National Park, the nearest Class I area. The WSA is near the center of an area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979).

Geology

The Horseshoe Canyon is located in the Canyonlands section of the Colorado Plateau Physiographic Province. The WSA lies along the southern limb of a large structural trough that separates the San Rafael Swell to the northwest from the Monument Upwarp to the southeast. The moderately deep Henry Mountains structural basin slopes to the southwest.

Rocks at the surface of the WSA are of Triassic and Jurassic Ages and belong to the Navajo Sandstone, the Carmel Formation, and the Entrada Sandstone. The overall structure of the WSA is a smooth, northwest-dipping homocline.

This WSA varies in elevation from 5,800 to 6,200 feet and contains the headwaters of three creeks (Barrier, Bluejohn, and Spur), which have carved their own canyons. Each canyon is separated by weathered sandstone and large grassy parks such as Goat Park, Upper Pasture, and Lower Pasture. Canyon widths vary from a few feet to 0.50 mile. The three canyons join at the north end of the WSA; Horseshoe Canyon then continues to the Green River. The canyons reach depths of up to 600 feet and are characterized by a wide range

of colors, sheer rock faces, and many large overhangs forming small caves. Erosive landforms present include buttes, mesas, spurs, elevated plateaus, cliffscarps, rounded slickrock domes, entrenched canyons, and arroyos. Depositional landforms include narrow stream channel flood deposits, stream terraces, rock falls, talus slopes, alluvial fans, and sand dunes. Overall, the quality of landform expression in the WSA is an above-average example of the landforms found in the Colorado Plateau.

Soils

Almost a third of this area is rock outcrop. The remaining soils are sandy loams. Because of low precipitation in the WSA, most erosion is occurring from wind. Erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	27,900	72	36,270
Slight	0.6	10,900	28	6,540
Stable	0.3	0	0	0
Total		38,800	100	42,810

Sources: USDI, BLM, 1982c; Leifeste, 1978.

Vegetation

The WSA is located within the Navajo Basin phytogeographic subdivision of southeastern Utah (Neese, 1981). Most of the WSA is characterized by pinyon-juniper, desert grass, and blackbrush communities, with the remaining area consisting of rock outcrops and deep canyons. The pinyon-juniper community generally lies on the west and south sides of the WSA and is found on gently rolling hills in association with shrubs and desert grasses. Desert grass communities are found lying predominantly in grassy parks between canyon tributaries and are occupied by mid-grasses in association with Mormon tea and mixed desert shrubs. Blackbrush communities are located generally in the northern portions of the WSA, which are characterized by canyons, colorful rock formations, and grassy parks between canyon tributaries. Table 3 summarizes existing vegetation types.

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
HORSESHOE CANYON (SOUTH) WSA

Resource	Alternatives		
	No Action	All Wilderness (38,800 Acres)	Partial Wilderness Designation (36,000 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 34 million barrels of oil from tar sand, 50,000 tons of copper, and 1,000 tons of uranium oxide.	Oil, gas, and tar sand likely would not be recovered. Assuming a worst-case analysis, copper and uranium recovery may also be foregone. Due to the low likelihood of development of these mineral resources, however, the loss of development opportunity would not be significant.	Although likelihood is low, up to 1 million barrels of oil, 2 billion cubic feet of natural gas, 3,500 tons of copper, and 35 to 70 tons of uranium oxide could be recovered.
Wildlife	Less than 1 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.	Wildlife in the designated area would benefit from solitude. Less than 1 percent of the nondesignated area could be disturbed by energy and mineral exploration and development, which could adversely affect wildlife habitat.
Livestock	Grazing of 1,150 AUMs and maintenance of existing developments would continue. Proposed new developments, consisting of three reservoirs, could be constructed.	Grazing of 1,150 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. New developments, proposed in the future, might not be allowed.	Effects would be about the same as for the All Wilderness Alternative.
Visual Resources	The quality of visual resources could be impaired on up to 240 acres.	Visual quality could be impaired on up to 40 acres.	Visual quality could be impaired on up to 120 acres, including 30 acres in the designated area. About 79 percent of the Class A scenery would be protected in the designated area.

TABLE 1 (continued)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
HORSESHOE CANYON (SOUTH) WSA

Resource	Alternatives		
	No Action	All Wilderness (38,800 Acres)	Partial Wilderness Designation (36,000 Acres) (Proposed Action)
Recreation	ORV use would continue on 23 miles of ways at current low levels. Overall recreational use could increase from the present 100 visitor days per year to 150 over the next 20 years. Up to 240 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 23 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.	ORV recreational use could continue on 2 miles of ways in the undesignated portion.
Wilderness Values	Wilderness values could be lost on up to 240 acres (0.6 percent of the WSA), but the values in the rest of the WSA would not be affected.	Wilderness values would be protected, except on up to 40 acres (less than 1 percent of the WSA) which may be disturbed under valid mineral rights.	Wilderness values would be protected, except on up to 50 acres which may be disturbed by development of valid existing rights. Of the areas with high quality wilderness values, the following portions would be protected in the designated area: naturalness, 93 percent; solitude, 99 percent; and primitive recreation, 100 percent.
Land Use Plans and Controls	This alternative would be consistent with the <i>Wayne County Master Plan</i> , State of Utah plans and policies, and the BLM Henry Mountains MFP. It would not complement the NPS recommendation for nearby wilderness.	This alternative would not be consistent with Wayne County's concept of multiple use. It would be consistent with State policy if lands were exchanged, and would complement the NPS proposal for wilderness. Designation would constitute amendment of the BLM Henry Mountains MFP.	Partial designation would be the same as the All Wilderness Alternative, except that the portion not designated would be consistent with Wayne County plans.
Socio-economics	Annual local sales of less than \$31,510 and Federal revenues of up to \$94,850 would continue. An additional \$23,160 per year in Federal revenue could be derived from leasing of presently unleased areas.	Annual local sales of less than \$31,510 and Federal revenues of up to \$1,610 would continue, but Federal revenues of up to \$118,010 from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.	The effects of this alternative would be about the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$108,000.
			ORV recreational use could continue on 11 miles of ways in the undesignated portion.
			Wilderness values would be protected, except on up to 120 acres which could be disturbed by development of valid mineral rights. Of the areas with high quality wilderness values, the following portions would be protected in the designated area: naturalness, 74 percent; solitude, 79 percent; and primitive recreation, 100 percent.
			Consistency would be about the same as with the 36,000-acre Partial Wilderness Alternative.
			The effects of this alternative would be about the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$86,056.

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There are no identified threatened, endangered, or sensitive plant species in the WSA. Small areas of riparian vegetation are found along the intermittent streambeds. The acreage of riparian vegetation is small and, therefore, has not been identified in Table 3.

TABLE 3
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Rock outcrops, sand	13,580	35
Pinyon, juniper	7,760	20
Mormon tea	6,208	16
Assorted shrubs, grasses	11,252	29

Source: USDI, BLM, 1982c.

The Horseshoe Canyon (South) WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the WSA are listed on Table 4. PNV is the vegetation types that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	10,860	28
Galleta-three awn shrubsteppe	27,940	72

Source: USDI, Geological Survey, 1978.

Water Resources

There are no perennial streams in the WSA. Numerous small canyons serve as the headwaters of three ephemeral streams which are tributaries of the Green River. Nine springs, six of which are improved, have been identified in the WSA. All springs have either private or BLM water user claims and are used by livestock, wildlife, and wild burros.

Most of the water originates from runoff or the Navajo Sandstone aquifer. Generally, total dissolved solids (TDS) range from 250 to 1,000 parts per million (ppm). Recommended TDS levels for human consumption are up to 500 ppm. Levels recommended for livestock are up to 7,000 ppm. Almost all springs have an extremely high coliform bacteria count.

The water-bearing aquifer is the Navajo Sandstone. Water is less than 1,000 feet from the surface, and water yields range from 5 to 50 gallons per minute. TDS range from 250 to 1,000 ppm.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is low to moderate, due to a marginally favorable geologic environment. An overall importance rating (OIR) of 2+ was assigned to the Horseshoe Canyon (South) WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report for the WSA. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider the reports prior to making final wilderness recommendations.

All resources were assigned favorabilities of f2 or less, with the exception of the uranium resource, which is rated as f3.

The energy and mineral resource rating summary is given in Table 5. (No rating for the tar sand resource was given by SAI, 1982.)

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency,

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1983). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand. There is almost no potential for silver in the WSA.

TABLE 5
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 million cubic feet of gas
Copper	f2	c1	Less than 50,000 tons
Uranium	f3	c1	500 to 1,000 tons
Coal	f1	c4	None
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None
Gold	f2	c1	Little to none
Silver	f2	c1	Little to none

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

There are no known deposits of leasable minerals in the WSA, with the exception of some minor gas deposits in the northwest portion. There are no current exploration, drilling, or mining activities for leasable minerals occurring in the WSA. None of the leases show evidence of commercial quantities.

Oil and Gas

As of March 1984, approximately 31,080 acres of the WSA were under oil and gas lease. Approximately 26,280 acres of these leases are pre-FLPMA and 4,800 acres are post-FLPMA (USDI, BLM, 1984b).

Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally

require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

The entire WSA is in Category 1 (open to leasing with standard stipulations). Approximately 10 million barrels of oil in-place (3 million estimated recoverable) or 60 billion cubic feet of natural gas (18 billion estimated recoverable) could occur within the WSA. Refer to Appendix 6 for estimates of recoverability.

Based on the geographic location of this WSA in the Paradox Basin and geologic inference, this WSA has low potential for the occurrence of oil and gas (SAI, 1982).

Tar Sand

Tar sand deposits occur principally in the White Rim Sandstone of Permian Age (Campbell and Ritzma, 1979). Approximately 58 acres of the WSA are part of the Tar Sand Triangle STSA and are under application for conversion to combined hydrocarbon leases. The likelihood of tar sand occurrence decreases from south to north. The thickness of the White Rim Sandstone beneath the entire WSA varies from 250 to 400 feet (Jackson, 1983). The White Rim Sandstone is known over a broad region for its excellent reservoir characteristics (Campbell and Ritzma, 1979). As evidenced by drill hole data, the White Rim Sandstone in the northern portion of the WSA does not contain heavy oil. However, because there have been no drill holes in the southern portion of the WSA relating tar sand deposits with the main deposits to the south, deposits underneath the WSA are conjectural (Jackson, 1983). Until more holes are drilled in the northern portion of the Tar Sand Triangle STSA, the exact northern boundary of the deposit cannot be determined (Jackson, 1983). Approximately 112 million barrels of oil in-place (34 million recoverable) could occur within the WSA.

LOCATABLE MINERALS

Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation. After that date, all other lands (including claims not determined valid) within wilderness would be closed to prospecting and exploration (USDI, BLM, 1981b).

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There are no known commercial deposits of locatable minerals in the Horseshoe Canyon (South) WSA. No claim is currently producing commercial quantities. Although a validity determination must be made on all claims on a case-by-case basis, the favorability and certainty ratings indicate that no claim is likely to be determined valid.

Locatable minerals with a probability of occurrence in the area would be almost exclusively uranium minerals occurring in the Chinle Formation of Triassic Age, which underlies the entire WSA at a depth of 1,500-2,000 feet. The WSA lies within an area containing relatively few uranium deposits (SAI, 1982).

Copper has some potential of occurring within the WSA because of its close association with uranium. Production of by-product copper from mining in this part of the Colorado Plateau chiefly occurs around Moab, Utah.

The WSA has almost no potential for gold and silver (SAI, 1982). Currently, there are 81 mining claims in the WSA involving 1,670 acres. Approximately 500 to 1,000 tons of uranium oxide and 50,000 tons of copper could be within the WSA.

SALABLE MINERALS

There are no commercial deposits of salable minerals in the WSA. There are scattered deposits of sand and gravel. However, sand and gravel are common in the area, and there are deposits closer to existing and possible future market areas.

Wildlife

Several species of wildlife may be found in the WSA. These include mule deer, antelope, fox, coyote, and badger, as well as a few species of birds. The area contains about 2 percent of the habitat for Deer Herd Unit 29. This herd unit covers the San Rafael Desert, but distribution and abundance is principally along the river bottoms, especially the Price River, all of which are outside the WSA (Utah Division of Wildlife Resources [UDWR], 1977).

The WSA also provides less than 15 percent of the habitat for Antelope Herd Unit 9. This herd is widely scattered and is limited by the availability of water (UDWR, 1982). Pronghorn antelope need up to 1.2 gallons (4.5 liters) of water per animal per day during the peak of summer (Salwasser, 1980). Also, most pronghorn antelope are found within 4 miles of a water source.

UDWR introduced desert bighorn sheep onto the nearby Orange Cliffs in 1982. The WSA contains habitat for this species. The distribution of water

is the greatest limiting factor for bighorn sheep (Monson and Sumner, 1980). Also, bighorn sheep do not use water developments utilized by livestock or stay in areas used by livestock (Utah Department of Natural Resources, Division of Fish and Game, 1968).

As previously stated, there are nine springs in the WSA; these range from 0.5 to 4 miles apart. However, only six of these springs are improved, and the quantity of water yield is not known.

No threatened and endangered species inhabit the area; however, Bell's vireo and golden eagle (which BLM considers sensitive) may occasionally be seen in the WSA. There is no critical habitat in the WSA.

There are no existing wildlife rangeland improvements and none are planned. However, three livestock reservoirs are planned and these could benefit deer and antelope.

Forest Resources

Much of the area is bare rock. About 20 percent of the WSA has pinyon-juniper vegetation located on mesas on the west and south sides; however, its quantity, quality, and remoteness preclude utilization. Therefore, forest resources are not significant in the WSA.

Livestock and Wild Horses/Burros

Ninety-seven percent of the WSA falls within Robbers Roost Allotment, with the remainder in the Horseshoe Canyon Allotment. Five of the permittees' ten base waters (refer to Glossary) on the Robbers Roost Allotment are included in the WSA. All are improved with troughs or reservoirs. Other rangeland improvements include 2 miles of fence, one reservoir, three corrals, six improved springs and about 6 miles of ways used for livestock purposes. Three new reservoirs are proposed within the Robbers Roost Allotment. There are no vegetation manipulation or treatment projects planned within the WSA.

Livestock use occurs year-round throughout most of Robbers Roost Allotment with the exception of canyon bottoms. There are no rangeland improvements and little livestock use on the portion of Horseshoe Canyon Allotment included in the WSA. Table 6 gives livestock grazing use data for this WSA.

There are no wild horses within the WSA. Part of Wild Burro Herd Unit 5 is included within this WSA. Based on reported sightings, Horseshoe Canyon is one of the primary use areas for these animals. The wild burro herd appears to be low at

HORSESHOE CANYON (SOUTH) WSA

TABLE 6
Livestock Grazing Use Data

	Allotment	
	Robbers Roost	Horseshoe Canyon
Permittees	1	1
Kind of Livestock	Cattle	Cattle
Period of Use	Yearlong	11/1 to 4/15
Percent of Allotment Area in WSA	20	3
Estimated Available AUMs in WSA	1,060	90

Source: USDI, BLM, 1983b.

this time. The most recent (1981) BLM inventory of the herd located 16 mature animals and three colts (USDI, BLM, 1983b). The burros winter in Horseshoe Canyon.

Visual Resources

Visual character of the WSA is exceptional. About 94 percent of the area rates in the highest scenic quality class. Portions along the south and south-east boundary have gently rolling hills with pinyon trees, shrubs, and grasses. The central portion of the WSA is characterized by deep canyons from several feet to 0.50 mile in width, colorful rock formations, and grassy parks with slickrock outcrops between the canyons. Vegetation includes grassy meadows, scattered pinyon-juniper, and occasional riparian areas along some of the intermittent streambeds. The WSA is not visible from any major travel routes. However, a secondary travel route borders the WSA on the west, south, and east; it is a major access route to the Maze District of Canyonlands National Park.

The BLM Visual Resource Evaluation System rating for the WSA's visual characteristics is shown in Table 7. BLM's VRM system is explained in Appendix 7.

TABLE 7
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	36,500	94
Class B	2,300	6
Class C	0	0
Management Class		
Class I	0	0
Class II	36,500	94
Class III	2,300	6
Class IV	0	0

Source: USDI, BLM, 1982c.

Cultural Resources

There are 13 recorded archaeological sites including lithic scatters, campsites, and one habi-

tation site; these are concentrated mostly along the benches above the main canyon and side canyons. In the nearby Maze District and Horseshoe Canyon Detached Unit of Canyonlands National Park, over 200 sites have been recorded, which indicates a very high potential for finding additional sites in the WSA.

Cave sites, particularly Cowboy and Jim Walters Caves, show a long-term repeated occupancy within the WSA. Both of these caves are now on the National Register of Historic Places. The WSA also contains a unique rock-art style (known as Barrier Canyon Style) which is largely confined to the WSA and the Horseshoe Canyon Detached Unit of Canyonlands National Park. In total, 2 known sites are of National Register quality within the WSA. Vandalism to the sites continues to be a problem. For example, the Jim Walters cave was destroyed by vandals before it could be properly studied.

Recreation

The WSA has no developed recreational facilities or trails. Access to this area is possible by a jeep road or foot trail via the Horseshoe Canyon Detached Unit of Canyonlands National Park.

Fifteen recreational opportunities were evaluated for their quality in this WSA. Eleven opportunities are present in varying degrees. Seven of these opportunities (backpacking, camping, horseback riding, photography, and archaeological, geological, and scenic sightseeing) are outstanding in quality. Dayhiking, hunting, nature study, and wildlife sightseeing are average or below average in quality.

Backpacking opportunities are excellent due to: (1) the large size of the WSA; (2) the presence of adjacent potential wilderness in the lower end of Horseshoe Canyon; (3) a variety of hiking routes (approximately 60 miles total) over terrain with various levels of difficulty; and (4) a variety of interesting special features to explore and discover. An extended hiking trip from Hans Flat down the canyon system to the Green River would cover over 35 miles plus side trips. Dayhiking opportunities are somewhat limited by restricted access.

Camping opportunities are excellent due to the presence of many suitable sites, particularly under large rock overhangs in the canyon walls and in the grassy parks between canyon drainages.

Opportunities for archaeological sightseeing are excellent due to the many sites in the area. The

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area is historically associated with Butch Cassidy and the Wild Bunch.

The various rock formations, erosional features, caves, vegetation, and narrow canyons all contribute to above-average opportunities for photography and geological and scenic sightseeing. While the area possesses exceptional recreational potential, use is limited due to remoteness, lack of publicity, and nearby competing areas. Visitor use data are nonexistent, but use is estimated at approximately 100 visitor days a year. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980. There is little or no ORV recreational use in the WSA. There are about 23 miles of vehicular ways in the WSA and the entire area would be open to ORV use under the Henry Mountain Planning Area MFP.

Wilderness Values

SIZE

The Horseshoe Canyon WSA is 12 miles long (north to south) and 7 miles wide and encompasses 38,800 acres. This WSA meets the size criteria for wilderness designation, whether or not the adjacent areas (a proposed wilderness area in the Horseshoe Canyon Detached Unit of Canyonlands National Park and the Horseshoe Canyon [North] WSA) are designated as wilderness.

NATURALNESS

The WSA is in a natural condition. The only human intrusions consist of 2 miles of fence, three corrals, one reservoir, two drill sites, six improved springs, and 23 miles of ways in various stages of natural rehabilitation. Overall, intrusions were judged substantially unnoticeable, and the WSA as a whole meets the standard for naturalness.

SOLITUDE

This WSA consists of numerous steep-walled, winding canyons that offer topographic screening and that substantially contribute to opportunities for solitude. Scattered clusters of pinyon-juniper vegetation on the mesas above the canyons screen visitors from each other on the periphery of the WSA. Also, there are no sights and sounds outside the WSA that would adversely affect opportunities for solitude. The large size of the area also contributes spatial screening.

The quality of solitude meets the standards for outstanding set by the *Wilderness Act* on approximately 36,300 acres in the WSA. The opportunities on the remaining 2,500 acres (in the northern portion of the WSA) were rated less than outstanding due to the small amount of topographic and vegetation screening in this area.

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, recreational opportunities present, and an evaluation of the quality of these opportunities.

As discussed in Affected Environment, Recreation section, this WSA has 11 recreational opportunities present. Due to the presence of numerous potential campsites, rugged and colorful canyons, caves, slickrock areas, contrasting vegetation types, springs, and numerous archaeological sites, seven opportunities were rated outstanding. These include backpacking, camping, horseback riding, photography, and archaeological, geological, and scenic sightseeing.

Overall, the WSA offers outstanding opportunities for a variety of primitive and unconfined types of recreation that meet the standard set by the *Wilderness Act* on approximately 28,400 acres. Opportunities on the remaining 10,400 acres were rated less than outstanding in the rolling pinyon-juniper vegetated portions along the southern and southwestern margins due to the absence of recreational features.

SPECIAL FEATURES

This WSA contains several high quality archaeological sites (unique rock art, long-term-use cave sites, etc.), outstanding canyon scenery, caves, and wild burros. The area also has historic association with Butch Cassidy and the Wild Bunch. Several cabins used by the outlaws are on the edge of the WSA. The diversity and uniqueness of these features enhance the other wilderness values of the WSA.

Cowboy Cave, an archaeological site near Spur Fork Canyon, contains some of the richest and oldest paleological remains in the State of Utah. Underlying the cultural remains in the cave is a fairly heavy dung deposit left by mammoth, bison, horse, camel, and sloth. The mammoth is further represented by the tips of two juvenile tusks. The dung was radiocarbon dated to between 11,000 and 13,000 years ago (9,000 to 11,000 B.C.).

Land Use Plans and Controls

There are no private in-holdings, private subsurface rights, or rights-of-way in the WSA.

There are three State sections within the WSA and eleven adjacent State sections. The management philosophy for all State sections is to maximize economic returns for the State School Fund. Except for grazing, no activities are presently

occurring on these sections, although these are under lease for oil and gas.

The *Final Report, Wayne County Master Planning Project* (Call Engineering, Inc., 1976) covers this WSA. This document does not identify recommendations at specific locations. The plan recognizes that "... outstanding natural landmarks should be preserved as much as possible." However, it also states that "Open spaces should be used for many purposes rather than strictly as wilderness areas."

The WSA is managed under the BLM Henry Mountain Planning Area MFP which allows multiple use as discussed in the description of the No Action Alternative. It has been reviewed by the Governor of Utah and found to be consistent with the plans of the State of Utah.

This WSA adjoins a proposed wilderness area in the Horseshoe Canyon Detached Unit of Canyonlands National Park, as identified in the Canyonlands National Park Wilderness Recommendation (USDI, NPS, 1974).

Socioeconomics

DEMOGRAPHICS

The WSA lies within the political boundaries of Wayne County, one of Utah's least populated counties, with a population density of 0.77 persons persquare mile. Between 1970 and 1980, the county population climbed from 1,483 to 1,911 people, reflecting a 28.9-percent increase compared to the State's 37.9-percent increase (U.S. Department of Commerce [USDC], Bureau of the Census, 1983; University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Hanksville, a small community of approximately 351 people, located about 48 road miles to the west.

EMPLOYMENT

This WSA lies within Wayne County, one of the poorest counties in the State of Utah (South et al., 1983). In 1980, government employment represented the largest employment sector within the county, with agriculture a close second and a dominant economic activity of the area. Nonfarm proprietors represented the third largest sector of county employment (refer to Table 8). The county has some tourism and lumber activities; however, the principal commercial center is Richfield, Utah, located in Sevier County (South et al., 1983). Green River, 52 road miles north of the WSA in Emery County, is a main gateway and service area for visitors to the Horseshoe Canyon vicinity.

TABLE 8
1980 Employment
Wayne County, Utah

Industrial Sector	Number	Percent
Agriculture	191	25
Mining	9	1
Construction	84	11
Manufacturing	37	5
Transportation, Communication, and Utilities	3	—
Wholesale and Retail Trade	42	5
Finance, Insurance, and Real Estate	12	2
Services	31	4
Government	207	27
Nonfarm Proprietors	152	20
Total	768	100

Sources: Utah Department of Employment Security, 1982; USDC, Bureau of Economic Analysis, 1982.

INCOME AND REVENUES

In 1980, the nonfarm industry sector in Wayne County produced nearly 89 percent or \$7.3 million of total labor and proprietors' income within the county. Within this income figure, the private sector produced nearly 72 percent of these earnings, mainly from mining and construction, while the government sector produced 28 percent. Farm labor and proprietors' income totaled \$0.9 million or 11.1 percent of total personal earnings (University of Utah, Bureau of Economic and Business Research, 1982). (Refer to Table 9.)

TABLE 9
1980 Personal Income and Earnings
Wayne County, Utah

Type/Source	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietors' Income (Earnings)	8,245	17.5
Total Labor and Proprietors' Income by Industry Source		
Farm	917	16.6
Nonfarm	7,328	17.4
Private	5,268	22.7
Agricultural	81	(D)
Service and Other		
Mining	(D)	(D)
Construction	(D)	(D)
Manufacturing	291	4.1
Transportation and Public Utilities	183	0.9
Wholesale Trade	69	1.8
Retail Trade	496	3.4
Finance, Insurance and Real Estate	(D)	(D)
Services	416	11.1
Government	2,060	8.2

Sources: USDC, Bureau of Economic Analysis, 1982; University of Utah, Bureau of Economic and Business Research, 1982.

(D) Not shown to avoid disclosure of confidential information or for items \$50,000 or less. Data are included in totals.

HORSESHOE CANYON (SOUTH) WSA

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 10
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	None	\$93,240
Mining Claim Assessment	Less than \$8,100	None
Livestock Grazing	\$23,000	\$ 1,610
Recreational Use	Less than \$410	Unknown ²
Total	Less than \$31,510	Up to \$94,850

Sources: BLM Files; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

² A few commercial permits have been issued since 1980.

The WSA has 81 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of the 81 claims are current in assessment work.

The geophysical exploration that has been conducted in the WSA has generated some temporary local employment and income.

Two oil and gas exploration wells have been drilled in the WSA over the past 29 years. This drilling has generated an estimated 3 work years of employment over the past 29 years, some of which represent local employment.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Two livestock operators have a total grazing privilege of 1,150 AUMs within the WSA. If all this forage were utilized, it would account for \$23,000 of livestock sales and \$5,750 of ranchers' returns to labor and investment.

The WSA's recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day

for all types of recreation in Utah are approximately \$4.10. The recreational use for Horseshoe Canyon (South) WSA is estimated as about 100 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Wayne and Emery Counties.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 10).

Oil and gas leases in the WSA cover approximately 31,080 acres. At \$3 per acre, lease rental fees could generate up to \$93,240 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 1,150 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$1,610 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines For All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section of this document.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to

develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.

5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, locatable mineral, and tar sand exploration and development. The area would be open to resource use and development without control for wilderness protection. The degree of future development is unknown but would probably be relatively low due to the WSA's rough terrain and low resource potential. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: tar sand, 40 acres; oil and gas, 160 acres; and uranium and copper, 40 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If tar sand is developed in the Tar Sand Triangle STSA, air quality could be reduced up to the PSD Class II limitations; however, the proximity of the WSA to Canyonlands National Park may result in restriction of tar sand development to meet PSD Class I limitations. Disturbance of 240 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because of the 200 acres of surface disturbance associated with locatable minerals (i.e., uranium and copper) and oil and gas exploration and development activities. The small acreage affected and the methods for extraction of locatable minerals

would not significantly affect geology. With in-situ production, subsidence could occur on the 58 acres of the Tar Sand Triangle STSA within the WSA.

SOILS

It is estimated that up to 240 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 240 acres would increase from 312 cubic yards/year to 648 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 336 cubic yards (0.78 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible.

VEGETATION

The anticipated maximum of 240 acres disturbed would not significantly impact the WSA's sparse vegetation and there would not be major changes in any vegetation type.

WATER RESOURCES

Since precipitation is low and all streams are ephemeral within the WSA, no significant sedimentation or change in TDS is expected to occur from the 336 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur as allowed in the current MFP for the Henry Mountain Planning Area. Three proposed livestock reservoirs could be developed.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

The water requirement for a 70,000-barrels/day tar sand industry in the Tar Sand Triangle STSA would be 11,079 acre-feet/year for 130 years (USDI, NPS and BLM, 1984). That portion under lease conversion application covers 58 acres (approximately 0.07 percent of the STSA) and could be developed under this alternative. Development of ground water could occur within the WSA to help meet water requirements for tar sand production on the WSA or on adjacent areas.

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In-situ tar sand injection activities within the WSA and on adjacent areas would lower ground water quality within the WSA.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place (3 million estimated recoverable) or up to 60 billion cubic feet of natural gas (18 billion estimated recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits, no development is expected under this alternative.

Tar Sand

An estimated tar sand resource of 34 million barrels of recoverable oil on 58 acres of the STSA is under lease conversion application in the Horseshoe Canyon (South) WSA. This resource could be explored and potentially developed in the future and would not be affected by this alternative. It is estimated that up to 40 acres of surface disturbance would occur from tar sand development. The likelihood for production of oil from tar sand is thought to be minimal on the 58 acres within the WSA because the potential for tar sand deposits as an economically recoverable resource is low. SAI (1982) did not specifically evaluate tar sand in the WSA because of the low potential.

Locatable Minerals

Locatable mineral development could occur within the WSA. The entire WSA would remain open to mining claim location. Approximately 40 acres could be disturbed due to exploration and development of locatable mineral resources. The potential deposit of up to 50 thousand tons of copper and 500 to 1,000 tons of uranium could be developed. However, the likelihood of development is thought to be minimal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Under this alternative, wildlife could be affected by an increase in the availability of water through the construction of water catchments, reservoirs, and the improvement and maintenance of

springs. Desert bighorn sheep may migrate into the area and become established near isolated water sources. However, disturbance of an estimated 240 acres (0.62 percent of the WSA) through mineral and energy development and exploration would disrupt wildlife. Deer, pronghorn antelope, and mobile nongame animals would be dispersed from the disturbed area for the lifetime of these activities. Desert bighorn sheep would avoid the area. Less mobile wildlife would either perish or co-exist with these disturbances at smaller population levels. Bell's vireo and golden eagle would also avoid the disturbed area.

FOREST RESOURCES

Since there are few trees other than scattered pinyon and juniper, none of which are utilized (except by occasional campers or hikers), and since minimal surface-disturbing activities are anticipated, no significant loss or harvest of forest resources is expected.

LIVESTOCK AND WILD BURROS

Domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 1,150 AUMs currently allocated in the WSA are controlled by two livestock permittees. Additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA few, if any, changes in livestock management techniques are expected. The three proposed reservoirs could be developed and result in improved livestock distribution. The 240 acres of surface disturbed due to mineral and energy development could result in short-term losses of livestock forage. However, following reclamation, livestock forage production might increase on the reclaimed area.

The small herd of wild burros (approximately 19 animals) would continue use of the WSA as at present.

VISUAL RESOURCES

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 240 acres of surface disturbance from mineral and energy exploration and development would be degraded. Therefore, VRM Class II management objectives would probably not be met during the short term. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area for

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energy and mineral exploration and development (worst-case analysis) visual quality in the WSA could be significantly reduced. The probability of extensive energy and mineral exploration and development is low.

CULTURAL RESOURCES

The two National Register sites in the WSA would continue to receive protection under the National Historic Preservation Act and other regulations. Disturbance of 240 acres by mineral exploration and development under this alternative could affect National Register sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would mitigate impacts. Inadvertent loss or damage could occur in the disturbed area. The overall effect on cultural resources is unknown but, based on the experience of BLM District archaeologists, it is expected to be minimal. Vandalism would continue to be a problem and would increase in proportion to the general population increase.

RECREATION

Up to 240 acres could be disturbed by mineral and energy activities. Primitive recreational opportunities could be diminished on the affected areas. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for mineral exploration and development would improve access into the area for nonprimitive recreation.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 100 current visitor days per year to 150 visitor days at the end of 20 years if energy and mineral development do not affect primitive recreational values in the WSA.

Overflow from Canyonlands National Park and Glen Canyon NRA could further increase use. In addition, if tar sand development occurs and the road into the Tar Sand Triangle STSA is paved, improved access would increase recreational use of these areas. Recreational use in the vicinity of the WSA could increase by as much as 950 percent (to about 1,000 visitor days per year) due to improved access. During the high-use season

(March-June) this increase would amount to about 6.5 visitors per day (USDI, NPS, and BLM, 1984). Twenty-three miles of way would be left open to ORV use although they are not presently used for ORV travel.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Henry Mountain Planning Area MFP. Expected mineral and energy exploration and development could disturb an estimated 240 acres. Wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) could be lost or diminished in affected areas. However, the impacts to these values probably would not be significant due to the limited surface disturbance anticipated.

The 240 acres of mineral-related disturbance could result in a significant loss of naturalness and solitude throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Wayne County Master Plan* which recommends "many uses" for "open spaces," but it would not complement the NPS proposal of wilderness designation for the adjacent Horseshoe Canyon Detached Unit of Canyonlands National Park, because the WSA would not be recommended as wilderness. This alternative (No Action) is based on implementation of the current BLM Henry Mountain Planning Area MFP and is therefore in conformance with it. The No Action Alternative would be consistent with State of Utah plans and policies which emphasize economic return.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the potential uranium and oil and gas in the WSA were developed it would lead to an increase in employment and income for Wayne and possibly Emery Counties. However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (1,150 AUMs) and ability to maintain, replace, and build new range improvements would remain as at

present. Livestock sales would remain at approximately \$23,000 per year and ranchers' return to labor and investment would be about \$5,750 per year.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is estimated to increase only 50 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would likely not be significant to the local economy. However, new access for tar sand development in the Tar Sand Triangle STSA could lead to greater increases in recreation in the future.

Federal and State revenues would not be reduced by this alternative. There are 7,720 acres in the WSA open to oil and gas lease that are currently not leased. If leased they would bring up to \$23,160 additional Federal lease fee revenues per year in addition to new royalties from production of existing and future leases. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$1,610 per year) would continue. About 50 percent of these revenues would continue to be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (38,800 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 38,800-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 23 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities and that tar sand conversion areas would be either converted with the stipulation of no surface occupancy or denied. Oil and gas leases would

not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA.

Because potentially disturbed areas for this alternative would be smaller than under the No Action Alternative (40 vs. 240 acres) and because tar sand development could occur adjacent to the WSA with either of the alternatives, the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, forest, and cultural resources under the All Wilderness Alternative would be insignificant as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

WATER RESOURCES

Opportunities for additional improvements or expansion of existing water improvements could occur on a case-by-case basis if found compatible with wilderness values. It is assumed that the three proposed reservoirs would not be developed.

Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

In-situ tar sand development in areas adjacent to the WSA could, over time, lower quality of the ground water in this WSA. However, under this alternative water quality would not be decreased as rapidly in the WSA because the aquifer would not be injected directly, and lower quality water would have to migrate from distant injection activities (USDI, NPS and BLM, 1984). The time for ground water contamination to occur through migration cannot be determined. The potential amount of recoverable ground water in the WSA that could not be developed for use in tar sand production is unknown.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 31,080 acres (26,280 acres pre-FLPMA and 4,800 acres post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the

time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be re-issued.

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place or less than 60 billion cubic feet of natural gas with 3 million barrels of oil or 18 billion cubic feet of natural gas potentially recoverable could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Tar Sand

The extreme south end of the WSA may have potential for tar sand deposits. Approximately 58 acres of the WSA are part of the Tar Sand Triangle STSA and are under lease conversion application. It is unlikely that the lease could be developed considering the wilderness protection stipulations (no surface occupancy).

It is concluded that the potential for development of 58 acres of tar sand (34 million barrels of recoverable oil) would be foregone. However, the potential for this resource is low within the WSA, and the likelihood for development is thought to be minimal even without wilderness designation.

Locatable Minerals

Approximately 1,670 acres are under mining claim within the WSA, principally for uranium. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. If uranium is located prior to wilderness designation, as much as 40 acres could be disturbed due to exploration and development of existing claims. The worst-case impact to minerals would be if the potentially recoverable minerals are not within mining claims filed before designation. In that case the potential for recovery of 50,000 tons of copper and 500 to 1,000 tons of uranium oxide would be foregone. Because production of these metals is not currently occurring and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that development would occur even without wilderness designation. Therefore, this alternative would not result in any significant loss of recoverable uranium and copper resources.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude. However,

water is a limiting factor for wildlife in this WSA. If future water improvements were curtailed and the three proposed livestock reservoirs not constructed, potential habitat for deer, antelope, and nongame species would be reduced. Bighorn sheep may migrate into the area, but their numbers would remain low due to the limited availability of water.

In addition, disturbance due to exploration of locatable mineral resources could disrupt wildlife populations and result in these species leaving the disturbed area.

The occasional presence of Bell's vireo and golden eagle would remain the same in much of the WSA, except in those 40 acres of mineral disturbance where these species would leave the area.

LIVESTOCK AND WILD BURROS

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 1,150 AUMs currently allocated in the WSA are controlled by two livestock permittees. Since very little use of motorized vehicles is currently taking place to manage livestock, little effect on the management of livestock grazing is expected.

Rangeland improvements would be maintained as in the past, based on practical necessity and reasonableness. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, future roads or other livestock management facilities could be restricted to preserve wilderness values. It is assumed that the three proposed reservoirs would not be developed and livestock distribution would remain as at present. Short-term losses in livestock forage from mineral and energy developments would be reduced along with any potential long-term increases in forage following reclamation.

The small herd of wild burros (approximately 19 animals) would continue use of the WSA as at present.

VISUAL RESOURCES

The exceptional visual resources of the WSA would benefit slightly because the VRM class would change from Classes II and III to the more restrictive Class I. That class generally allows only natural ecological changes and, therefore, would reduce the potential for surface-disturbing activities. About 40 acres of surface disturbance could result from development of valid mining claims. Although mitigative measures would be

HORSESHOE CANYON (SOUTH) WSA

applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on large portions of the WSA. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Although use is currently low (about 100 visitor days a year), the WSA has outstanding primitive recreational values. If designated, those high quality recreational opportunities would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could also lead to an undetermined increase in primitive recreational use.

Considering this WSA's high wilderness quality and proximity to Canyonlands National Park, Glen Canyon NRA, and other probable wilderness areas, use could be expected to be higher than the above projection. In addition, if the anticipated tar sand development occurs and the road into the northern portion of the Tar Sand Triangle STSA is paved, recreational use in the area could increase by as much as 950 percent (to about 1,000 visitor days per year) due to improved access. During the high-use season (March-June) this increase would amount to about 6.5 visitors per day (USDI, NPS and BLM, 1984). Use relative to the size of the WSA would be low.

Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the

increased use. As recreation use increases commercial operations based on primitive recreational activities could apply for use of the WSA.

Mineral-related surface disturbance on up to 40 acres could cause localized impairment of values. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 23 miles of ways within the WSA would be closed to ORV use.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values. Recreation opportunities in lower Horseshoe Canyon and Canyonlands National Park would also be protected and enhanced by complementary management in this WSA.

WILDERNESS VALUES

Designation and management of all 38,800 acres as wilderness would contribute to the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude. Solitude would be preserved on approximately 36,300 acres that meet and 2,500 acres that do not meet the standards for outstanding solitude. Naturalness would be preserved on all 38,800 acres and primitive and unconfined recreation would be preserved on 28,400 acres that meet and 10,400 acres that do not meet the standards for outstanding opportunities. The special features in this WSA (i.e., caves, canyon scenery, wild burro herd, and archaeological and paleontological sites) would also be protected and preserved.

Outstanding opportunities for seven recreational activities (backpacking, camping, horseback riding, photography, and archaeological, geological, and scenic sightseeing) would be preserved. Although recreational use could increase substantially (refer to Recreation section above), use relative to the size of the WSA would be low. Therefore, no significant effect on solitude and primitive recreational values would be expected.

No development of leases is foreseen under this alternative. The possible mineral-related surface disturbance would, therefore, be reduced from 240 acres to 40 acres for development of valid

HORSESHOE CANYON (SOUTH) WSA

mining claims. Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. There are 1,670 acres (4 percent of the WSA) under mining claims. The potential for mineral development is low, but mineral-related disturbance (including access) could eliminate solitude, naturalness, and the opportunity for primitive and unconfined recreation on the affected areas. However, these values would not be reduced in the area as a whole. Because the potential for mineral production is low and mitigation would be imposed to protect wilderness values, any loss of these values under wilderness designation would be less likely than under the No Action Alternative.

Designation of this WSA as wilderness would benefit the values and uses of the contiguous NPS wilderness proposal and BLM WSA. These three areas share a common watershed, canyon system, extended recreation travel trails (hiking and horseback riding), and archaeological values.

Thus, it is concluded that wilderness designation and management of all 38,800 acres of the Horseshoe Canyon WSA would protect and preserve the wilderness values of naturalness, special features, and opportunities for solitude (outstanding on 36,300 acres) and primitive recreation (outstanding on 28,400 acres) except in localized areas affected by the surface disturbance related to mineral exploration.

LAND USE PLANS AND CONTROLS

Designation of the Horseshoe Canyon (South) WSA (in the BLM Richfield District) would complement the NPS wilderness proposal for the Horseshoe Canyon Detached Unit of Canyonlands National Park and designation of the Horseshoe Canyon (North) WSA (in the Moab BLM District) because the three units are contiguous with a combined total acreage of about 62,000 acres. The existing BLM Henry Mountain Planning Area MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Henry Mountain MFP.

The *Wayne County Master Plan* recommends multiple use of all public lands in the county. Wilderness designation would generally be consistent with multiple use because most resource uses would be allowed, although under more restrictive conditions. This alternative would conflict with the county's multiple-use concept because restrictive conditions would be placed

on mineral development and oil and gas leases would be phased out. If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$23,000 of livestock sales and \$5,750 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would be insignificant to both the local economy and individual businesses.

The loss of 31,080 acres now leased would cause an eventual loss of up to \$93,240 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$23,160 annually in Federal revenues from the 7,720 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

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Federal grazing revenues of \$1,610 per year would continue.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. No commercial outfitters use the WSA on a regular basis. A few commercial permits have been issued since 1980.

Partial Wilderness Alternative (36,000 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 36,000-acre area designated as wilderness and the 2,800-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that in the designated area some of the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities and that tar sand conversion areas would be either converted with the stipulation of no surface occupancy or denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed.

It is assumed that within the nondesignated area only 10 acres would be disturbed sometime in the future due to mineral and oil and gas exploration and development. Overall, 50 acres of surface disturbance would occur within the WSA, 190 acres less than under the No Action Alternative and 10 acres more than with the All Wilderness Alternative. Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.

The analysis of the No Action Alternative, based on 240 acres of surface disturbance and development of the Tar Sand Triangle STSA within and adjacent to the WSA, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, vegetation, water, forest, and cultural resources. Therefore, these resources would not be significantly affected by this partial designation alternative which assumes 50 acres of surface disturbance and recovery of tar sand from the Tar Sand Triangle STSA.

Restrictions on management and development methods within the WSA would result in essentially the same impacts on development of water sources, mineral and energy resources, wildlife, livestock grazing, wild burros, and land use plans as described for the All Wilderness Alternative. The following analysis describes the differences between the Partial Wilderness, No Action, and All Wilderness Alternatives.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 28,680 acres of oil and gas leases in the area that would be designated wilderness; 24,040 acres are pre-FLPMA and 4,640 acres are post-FLPMA. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil or less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil or 18 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potential resource of up to 2 million barrels of oil or 16 billion cubic feet of natural gas could be foregone. This would allow recovery of 1 million more barrels of oil or 2 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Tar Sand

Approximately 58 acres of the Tar Sand Triangle STSA fall within the portion of the WSA that would be designated wilderness. This acreage is presently under lease conversion application. It is assumed that conversion applications would either be approved with the stipulation of no surface occupancy or denied and that future leasing would not be allowed.

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The potential for development of 58 acres of tar sand with an estimated 34 million barrels of recoverable oil would be foregone as it would under the All Wilderness Alternative. However, the potential for this resource is low within the WSA, and the likelihood of production is small.

Locatable Minerals

Approximately 1,510 acres of the 1,670 acres of existing mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines with wilderness considerations. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b). It is assumed that approximately 40 acres of surface disturbance would occur due to exploration and development of existing claims within the area designated wilderness and future claims in the area not designated.

It cannot be determined how much of the potentially recoverable 50,000 tons of copper and 500 to 1,000 tons of uranium oxide in the WSA fall within the area that would be designated as wilderness under this alternative. The worst-case impact to minerals would be to assume that the mineral deposits were not included in mining claims filed before designation. If that were the case and assuming that locatable minerals are evenly distributed in the WSA, the potential for recovery of 46,500 tons of copper and 465 to 930 tons of uranium oxide in the wilderness area would be foregone. Development of locatable minerals in the nondesignated portion of the WSA would allow for recovery of 3,500 more tons of copper and 45 to 70 more tons of uranium oxide from the WSA than under the All Wilderness Alternative.

Because these minerals are not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that development would occur even without wilderness designation. Therefore, this alternative would not prevent recovery of significant amounts of uranium and copper.

LIVESTOCK AND WILD BURROS

The effect of designation of 36,000 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 1,150 AUMs allocated, 1,070 would be within the designated portion of the WSA and 80 would be within the nondesignated

portion. Development of future roads or other livestock management facilities for use with 1,070 AUMs in the designated portion could be restricted to preserve wilderness values. It is assumed that the three proposed livestock reservoirs would not be developed and livestock distribution would remain as at present. Overall little effect on the management of livestock grazing is expected.

The small herd of wild burros (approximately 19 animals) would continue use of the WSA as at present.

VISUAL RESOURCES

Because total surface disturbance in the WSA would be 50 acres under this alternative as opposed to 240 acres under No Action and 40 acres under All Wilderness, the impact on visual resources would be less than under the No Action Alternative and slightly more than under the All Wilderness Alternative. In the portion recommended for designation, 40 acres of surface disturbance could result from mineral exploration and development. Although mitigative measures would be applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on large portions of the designated area. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the designated area as a whole. An additional 10 acres in the nondesignated portion of the WSA would be disturbed and would not meet VRM Class II objectives. Disturbance of a total of 50 acres within the WSA would result in localized long-term impairment of visual values but would not significantly affect visual resources in the WSA as a whole.

RECREATION

Impacts on recreational values and opportunities for the 36,000-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout

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the designated area. Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 21 miles of ways within the WSA would be closed to ORV use.

In the area that would not be designated (2,800 acres), little change in recreational use is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 36,000 acres that would be designated wilderness. Size, naturalness (all 36,000 acres affected are natural), outstanding opportunities for solitude (all 36,000 acres meet the standard) and primitive recreation (including 28,400 acres that meet and 7,600 acres that do not meet the standards), and special features would be preserved. Although recreational use could increase substantially (refer to Recreation section under the All Wilderness Alternative), use relative to the size of the area would be low: estimated at approximately six visitors per day during the high-use season (March-June). Therefore, no significant effect on solitude and primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 40 acres. No development of leases within the designated portion is foreseen under this alternative. The possible mineral-related surface disturbance would therefore be reduced to 40 acres in the designated portion for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. Because the potential for mineral development is low and mitigation would be imposed to protect wilderness values, mineral-related disturbance, including access, could eliminate solitude, naturalness, and the opportunity for primitive and unconfined recreation on the affected areas but would not reduce these values in the designated portion as a whole. Sights, sounds, and emissions of activities within and adjacent to the 2,800-acre area that would not be designated could result in loss of solitude and primitive recreational values within the designated portion.

In the 2,800-acre area that would not be designated, there would be only 10 acres of disturbance from mineral and energy exploration and development activities. Those activities would

degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation [both rated less than outstanding]) from the commencement of activities through rehabilitation. Thus, slight long-term impairment of wilderness values in the portion that would not be designated would be expected. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated and in the Horseshoe Canyon Detached Unit of Canyonlands National Park.

The portion that would be designated would not be contiguous with the proposed wilderness in the Horseshoe Canyon Detached Unit of Canyonlands National Park (refer to Map 3). The area would be separated by a State section (1 mile) which contains the confluence of Bluejohn and Horseshoe Canyons.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative with the exception of its relationship to Canyonlands National Park. Immediately adjacent to this WSA, the Horseshoe Canyon Detached Unit of Canyonlands National Park has been proposed as wilderness. This alternative would not complement the NPS proposal or designation of the Horseshoe Canyon (North) WSA, because the designated portion would not be contiguous with these lands.

SOCIOECONOMICS

Overall there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could

alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by partial wilderness designation. However, any local income related to assessment of future mining claims on 93 percent of the WSA would be lost.

Livestock use and ranchers' income would continue as at present with \$23,000 of livestock sales and \$5,750 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from partial designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 28,680 acres now leased would cause an eventual loss of up to \$86,040 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$21,960 annually in Federal revenues from the 7,320 acres that could be leased without designation. Overall, the potential for oil and gas lease fee revenues would be \$8,400 per year more than under the All Wilderness Alternative. In addition to rental fees, any potential royalties from new lease production could also be foregone.

Federal grazing revenues of \$1,610 per year would continue.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. No commercial outfitters use the WSA on a regular basis. A few commercial permits have been issued since 1980.

Partial Wilderness Alternative (28,700 Acres)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 28,700-acre area designated as wilderness and the 10,100-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that in the designated area some of the existing mining claims would eventually be explored and developed, causing an estimated 30 acres of disturbance. It is also assumed that exist-

ing oil and gas leases in the designated portion would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed.

It is assumed that within the nondesignated area 90 acres would be disturbed sometime in the future due to mineral and oil and gas and tar sand exploration and development. Overall, 120 acres of surface disturbance would occur within the WSA; 120 acres less than under the No Action Alternative, 80 acres more than with the All Wilderness Alternative, and 70 acres more than the Partial Designation Alternative of designating 36,000 acres. Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.

The analysis of the No Action Alternative, based on 240 acres of surface disturbance and development of the Tar Sand Triangle STSA within and adjacent to the WSA, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, vegetation, water, forest, wildlife, and cultural resources. Therefore, these resources would not be significantly affected by this Partial Wilderness Alternative which is based on only 120 acres of surface disturbance and recovery of tar sand from the Tar Sand Triangle STSA within and adjacent to the WSA.

Restrictions on management and development methods within the WSA would result in essentially the same impacts on development of water sources, mineral and energy resources, wildlife, wild burros, and land use plans as described for the All Wilderness Alternative. The impacts of designating 28,700 acres of wilderness in the WSA would generally be of the same nature as those resulting from designation of 36,000 acres as wilderness. The magnitude would be slightly larger because an additional 70 acres of surface disturbance related to tar sand and oil and gas recovery could occur.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 24,680 acres of oil and gas leases in this area (20,680 acres are pre-FLPMA and 4,000 acres are post-FLPMA). Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil or less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil or 18 billion cubic feet of natural gas are estimated to be recoverable. It is assumed that the loss of potential resource recovery would be in direct proportion to the size of the area designated. Using this assumption, exploration and development of a potential resource of up to 1 million barrels of oil or 13 billion cubic feet of natural gas could be foregone. This would allow recovery of 2 million more barrels of oil or 5 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Tar Sand

Approximately 58 acres of the Tar Sand Triangle STSA would be within the portion of the WSA that would not be designated wilderness. This acreage is presently under lease conversion application.

The potential for development of this tar sand, with an estimated 34 million barrels of recoverable oil, would be maintained as it would under the No Action Alternative. However, the potential for this resource is low within the WSA, and the likelihood for production is small in either case.

Locatable Minerals

Approximately 50 acres of the 1,670 acres of existing mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b). It is assumed that approximately 40 acres of surface disturbance would occur due to exploration and development of existing claims within the area designated wilderness and existing and future claims in the area not designated.

It cannot be determined how much of the potentially recoverable 50,000 tons of copper and 500 to 1,000 tons of uranium oxide in the WSA fall within

the area that would be designated as wilderness under this alternative. The worst-case impact to minerals would be to assume that the mineral deposits are not included in mining claims filed before designation. If that were the case and assuming that locatable minerals are evenly distributed throughout the WSA, the potential for recovery of up to 37,000 tons of copper and 370 to 740 tons of uranium oxide would be foregone. Development of locatable minerals in the non-designated portion of the WSA would allow for recovery of 9,500 more tons of copper and 95 to 190 more tons of uranium oxide than with the All Wilderness Alternative.

Because these metals are not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur. Therefore, this alternative would not prevent recovery of significant amounts of uranium and copper.

LIVESTOCK AND WILD BURROS

The effects of designation of 28,700 acres of the WSA as wilderness on domestic livestock grazing would be essentially the same as with the All Wilderness Alternative. Of the 1,150 AUMs allocated, 821 would be within the designated portion of the WSA and 329 within the nondesignated portion. Development of future roads or other livestock management facilities for use with the 821 AUMs in the designated portion could be restricted to preserve wilderness values. It is assumed that the three proposed reservoirs would not be developed and livestock distribution would remain as at present. Overall, little effect on the management of livestock grazing is expected.

The small herd of wild burros (approximately 19 animals) would continue use of the WSA as at present.

VISUAL RESOURCES

Because total surface disturbance in the WSA would be 120 acres under this alternative, as opposed to 240 acres under the No Action Alternative and 40 acres under the All Wilderness Alternative, the impact on visual resources would be less than under the No Action and slightly more than under the All Wilderness. In the portion recommended for designation there could be 30 acres of surface disturbance resulting from mineral exploration and development. Although mitigative measures would be applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would

not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on large portions of the designated area. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the designated area as a whole. An additional 50 acres in the nondesignated portion of the WSA would be disturbed and would not meet VRM Class II objectives. On 40 acres that would be disturbed by tar sand development, now managed under Class III objectives, long-term impairment of visual values would result. Disturbance of a total of 120 acres within the WSA would result in localized long-term impairment of visual values but would not significantly affect visual resources in the WSA as a whole.

RECREATION

Impacts on recreational values and opportunities for the 28,700-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the designated area. Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 12 miles of ways within the WSA would be closed to ORV use.

In the area that would not be designated (10,100 acres), little change in recreational use is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 28,700 acres that would be designated wilderness. Designation and management of 28,700 acres of the WSA as wilderness would preserve the wilderness values of size, naturalness (all 28,700 acres appear natural), solitude (including 28,700 acres that meet the standard), and outstanding opportunities for primitive and unconfined recreation (including 28,400 acres that meet the standard). Although recreational use could increase substantially (refer to the Recreation section under the All Wilderness Alternative), use

relative to the size of the area would be low, estimated at approximately six visitors per day during the high-use season (March-June). Therefore, no significant effect on solitude and primitive recreation values would be expected. No development of leases within the designated portion is foreseen under this alternative. The possible mineral-related surface disturbance would therefore be reduced to 30 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. Because the potential for mineral development is low and mitigation would be imposed to protect wilderness values, mineral-related disturbance, including access, could eliminate solitude, naturalness, and the opportunity for primitive and unconfined recreation on the affected areas but would not reduce these values in the designated portion as a whole. Sights, sounds, and emissions of activities within and adjacent to the 10,100-acre area that would not be designated could result in loss of solitude and primitive recreational values.

In the 10,100-acre area that would not be designated, there would be 90 acres of disturbance from mineral and energy exploration and development activities. Those activities would degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation [both rated less than outstanding]) from the commencement of activities through rehabilitation. Thus, slight long-term impairment of wilderness values in the portion that would not be designated would be expected. Additionally, the sights, sounds, and emissions of those mineral and energy activities could impair solitude and primitive recreation values in the portion that would be designated and in the Horseshoe Canyon Detached Unit of Canyonlands National Park.

The portion that would be designated would not be contiguous with the proposed wilderness in the Horseshoe Canyon Detached Unit of Canyonlands National Park (refer to Map 3). The area would be separated by a State section (1 mile) which contains the confluence of Bluejohn and Horseshoe Canyons.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative, with the exception of its relationship to Canyonlands National Park.

HORSESHOE CANYON (SOUTH) WSA

Immediately adjacent to this WSA, the Horseshoe Canyon Detached Unit of Canyonlands National Park has been proposed as wilderness. This alternative would not complement the NPS proposal, because the designated portion would not be contiguous with these lands.

SOCIOECONOMICS

Overall there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be

significantly reduced by partial wilderness designation. However, any local income related to assessment of future mining claims on 74 percent of the WSA would be lost.

Livestock use and ranchers' income would continue as at present with \$23,000 of livestock sales and \$5,750 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from partial designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 21,320 acres now leased would cause an eventual loss of up to \$63,960 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$22,140 annually in Federal revenues from the 7,380 acres that could be leased without designation. Overall, the potential for oil and gas and tar sand fee revenues would be \$30,300 per year more than under the All Wilderness Alternative. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

Federal grazing revenues of 1,610 per year would continue.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. No commercial outfitters use the WSA on a regular basis. A few commercial permits have been issued since 1980.

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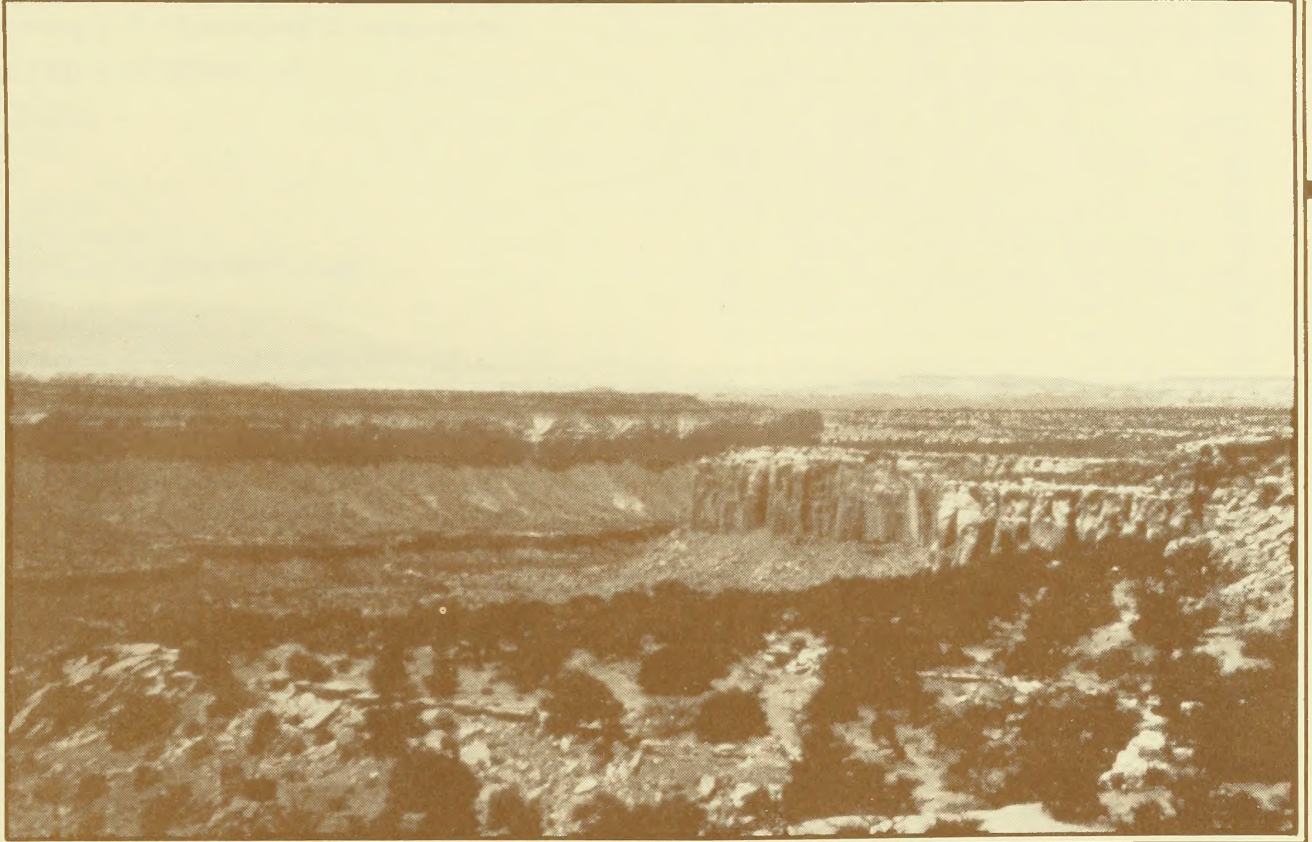
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French Spring- Happy Canyon WSA



FRENCH SPRING-HAPPY CANYON WSA

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FRENCH SPRING-HAPPY CANYON WSA (UT-050-236B)

INTRODUCTION

General Description of the Area

French Spring-Happy Canyon Wilderness Study Area (WSA) consists of 25,000 acres of public land (24,840 acres in eastern Wayne County and 160 acres in Garfield County) about 25 miles southeast of Hanksville, Utah. The area consists of high, narrow ridges and a large mesa cut deeply and abruptly by narrow, sheer-walled, meandering canyons. French Spring-Happy Canyon is a major side canyon of the Dirty Devil River.

Annual average precipitation in the WSA ranges from about 5 inches in the canyon bottoms to 10 inches at the higher elevations. Temperatures can range from under 0 degrees Fahrenheit (F) in the winter to over 100 degrees F in the summer.

Over half of the WSA consists of bare rock outcrops and steep slickrock canyons. Predominant vegetation in the remaining area includes pinyon-juniper, desert grass, and blackbrush communities.

Specific Issues Identified in Scoping

In addition to those general issues discussed and responded to in Volume I of this Environmental Impact Statement (EIS), the following issues and concerns were identified specifically for this WSA through public scoping (USDI, BLM, 1984d):

1. *Comment:* The major conflict with the area recommended suitable in the Draft Site-Specific Analysis (SSA) is that a portion thereof is located in the Tar Sand Triangle and thus overlies substantial hydrocarbon resources. What impacts on tar sand development can be expected from wilderness designation?

Response: As discussed in the Mineral and Energy Resources section of this document, the approximately 20,460 acres of potential combined hydrocarbon leases in the Tar Sand Triangle Special Tar Sand Area (STSA) would likely expire and would not be renewed if the WSA were designated as wilderness.

2. *Comment:* What impacts would tar sand development have on wilderness values?

Response: As discussed under Environmental Consequences, Wilderness Values section for the No Action Alternative, approximately

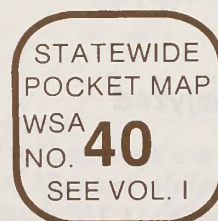
37 percent of the WSA could be disturbed by mineral development. Wilderness values would be lost or diminished in the affected areas.

3. *Comment:* There are significant intrusions in and around the area recommended as wilderness in the Draft SSA (e.g., the airstrip and road in Happy Canyon).

Response: As shown in Map 1, the landing strip is about 0.5 mile south of the WSA boundary and would not affect wilderness values. There are about 8 miles of ways, one corral, and two undeveloped springs in the WSA that are substantially unnoticeable in the area as a whole.

4. *Comment:* (1)The WSA possesses tenuous wilderness potential and should not be designated. (2)The Dirty Devil and Horseshoe Canyon (South) WSAs, which have definite wilderness characteristics, should be designated.

Response: During scoping for this EIS, BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. For each WSA, this was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS in order to obtain further input; this input has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and, at that time, will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and,



subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982a), and to other resource management factors generally as described in Volume I, Chapter 2, of this EIS.

Several concerns pertaining to the wilderness study process and/or the environmental analysis process were also raised during scoping. These concerns are discussed in the Scoping section of Volume I rather than in analyses for individual WSAs.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

A partial alternative to delete intrusions (e.g., the airstrip and road in Happy Canyon) was suggested during scoping. Such a partial alternative was not analyzed because there are no airstrips or roads in the French Spring-Happy Canyon WSA. The two airstrips in the area are south of the WSA boundary.

A partial alternative to delete the major conflict area with tar sand resources in the Tar Sand Triangle STSA was suggested during scoping. Such a partial alternative was not analyzed because only about 2,520 acres of this WSA do not overlap the STSA; therefore, in order to delete the area of conflict and still meet wilderness size criteria, the No Action Alternative would have to be used.

A suggestion was received during scoping to add a partial alternative to include the scenic area next to Glen Canyon National Recreation Area (NRA) to complement the National Park Service (NPS) wilderness proposal in the NRA. There is, however, no proposed wilderness area in the Glen Canyon NRA that is adjacent to the French Spring-Happy Canyon WSA. Therefore, such an alternative was not analyzed.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (25,000 acres); and (3) Partial Wilderness (11,110 acres). A description of each alternative follows. Where management intentions have not been clearly identified,

assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

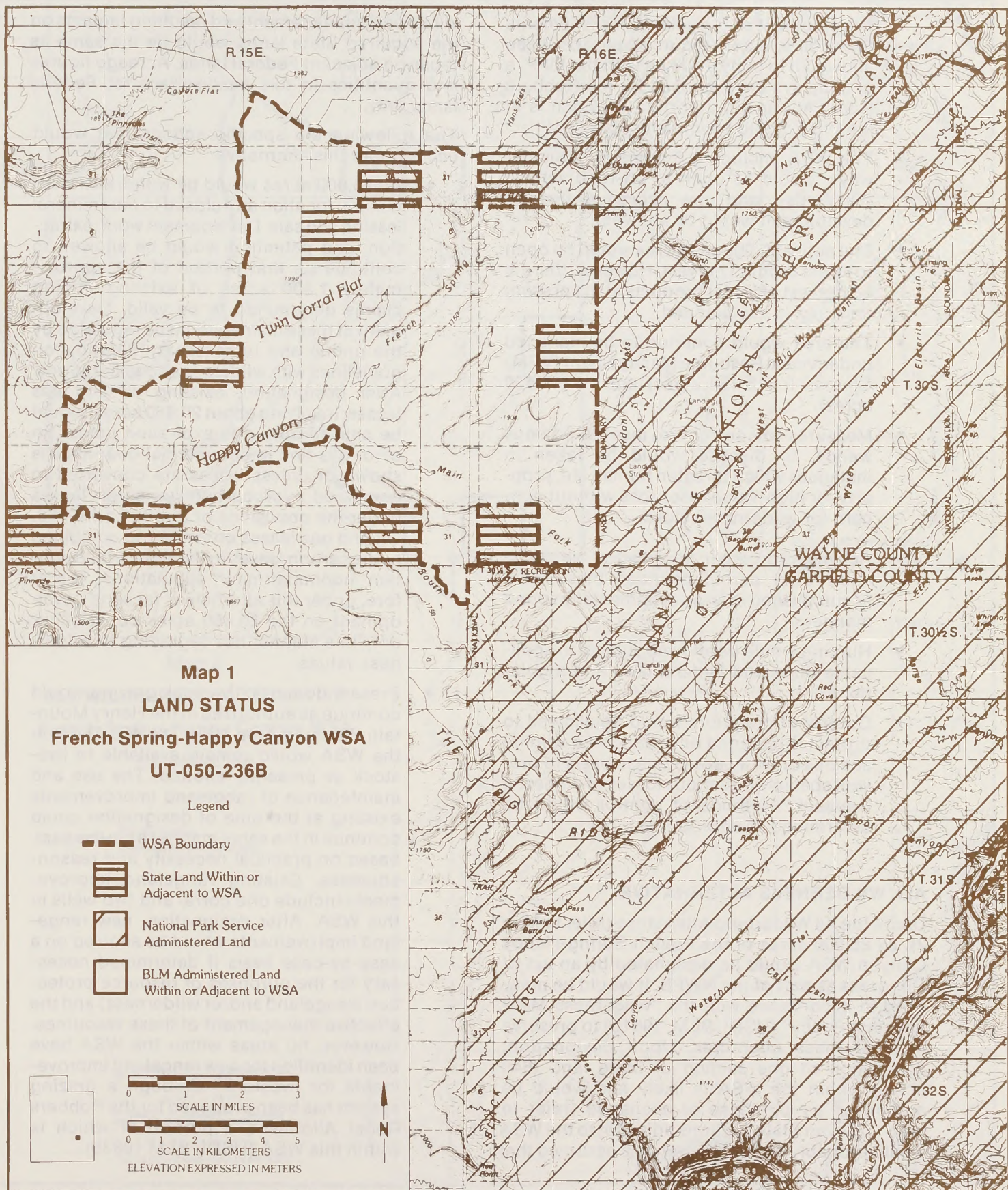
NO ACTION ALTERNATIVE

None of the 25,000-acre WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The State land within the WSA (refer to Map 1) has not been identified in the MFP for Federal acquisition through exchange or purchase. Refer to Volume I for further information regarding State in-holdings. There are no private or split estate lands located within the WSA. Acreage figures and quantities in this analysis are for Federal lands only.

The following are specific actions that would occur under this alternative:

- The entire area would remain open to mineral leasing, location, and sale. All 25,000 acres would be managed as leasing Category 1 (standard stipulations). About 20,460 acres of the WSA are within the Tar Sand Triangle STSA and are involved in lease conversion applications for tar sand development by in-situ methods (USDI, NPS and BLM, 1984.) Under this alternative it is assumed that any wilderness protection stipulations applied while the WSA is under wilderness review would be dropped if the area is not designated. Development work, extraction, and patenting would be allowed on existing mining claims (1,830 acres) and potential future mining claims. Development would be regulated by undue and unnecessary degradation guidelines (43 Code of Federal Regulations [CFR] 3809) without wilderness considerations.
- The present domestic livestock grazing use (439 Animal Unit Months [AUMs]) of the 25,000-acre area would continue as authorized in the MFP. Use, maintenance, and development of rangeland improvements (i.e., one corral and two wells) would be allowed if in conformance with the MFP. New rangeland improvements could be implemented without wilderness considerations, although none are proposed.

FRENCH SPRING-HAPPY CANYON WSA



FRENCH SPRING-HAPPY CANYON WSA

Development of rangeland improvements for wildlife, water resources, etc., could be allowed if in conformance with the MFP; a grazing system proposed for the Robbers Roost Allotment, a portion of which is in the WSA, could be implemented.

- The WSA, including 8 miles of vehicular ways, would be open to off-road vehicle (ORV) use, and new access routes for development would be allowed.
- The entire 25,000-acre area would be open to forest product harvest. However, there is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Classes II (13,480 acres) and IV (11,520 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances which threaten human life, property, or high-value resources without concern for wilderness values.
- Activities to gather information would be allowed by permit provided these were accomplished in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

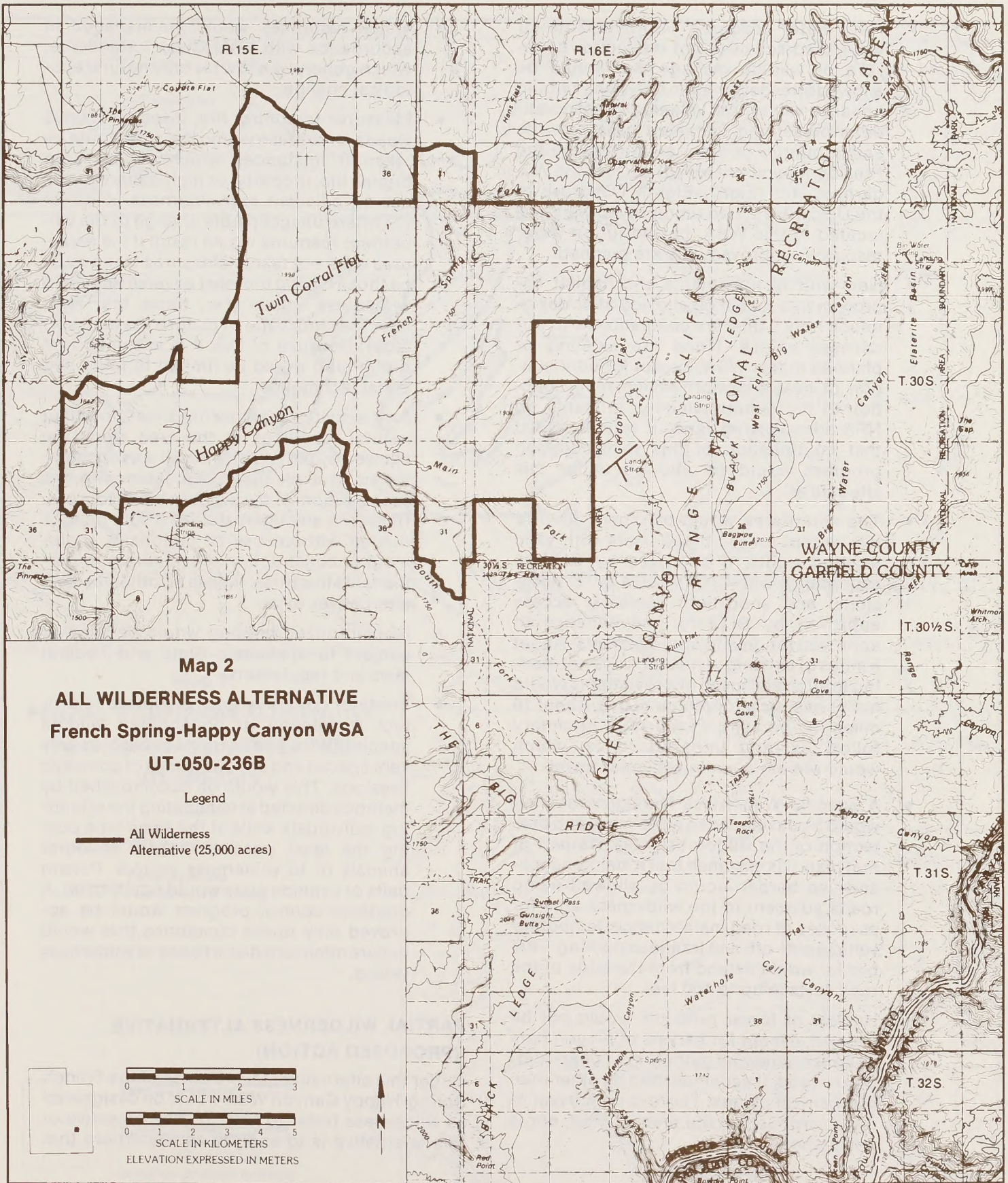
Under the All Wilderness Alternative (refer to Map 2), all 25,000 acres of the French Spring-Happy Canyon WSA would be designated by an act of Congress as part of the NWPS. It would be managed in accordance with the "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of one section of State land (640 acres) within the WSA is likely and would be authorized by purchase or exchange (refer to Map 1). Seven State sections adjacent to the WSA would probably be exchanged. It is assumed that

wilderness management and resulting impacts on the acquired State lands would be the same as those on adjacent Federal lands. Acreage figures and quantities in this analysis are for Federal lands only.

The following are specific actions that would occur under this alternative:

- All 25,000 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 1,830 acres of existing mining claims determined to be valid. Development of these claims would be regulated by the undue and unnecessary degradation guidelines with wilderness considerations. After designation, existing oil and gas leases, involving about 20,460 acres, would be phased out upon expiration unless an oil or gas find in commercial quantities is shown or unless leases are converted to combined hydrocarbon (tar sand) leases under the provisions of Public Law 97-78. Oil and gas leases converted to combined hydrocarbon leases in the WSA would contain nonimpairment stipulations; therefore, under this alternative, tar sand development on the 20,460 acres could occur only in a manner not degrading to wilderness values.
- Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 439 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland improvements existing at the time of designation could continue in the same manner as in the past, based on practical necessity and reasonableness. Existing rangeland improvements include one corral and two wells in this WSA. After designation, new rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources. However, no areas within the WSA have been identified for new rangeland improvements for livestock, although a grazing system has been proposed for the Robbers Roost Allotment, a portion of which is within this WSA (USDI, BLM 1983b).

FRENCH SPRING-HAPPY CANYON WSA



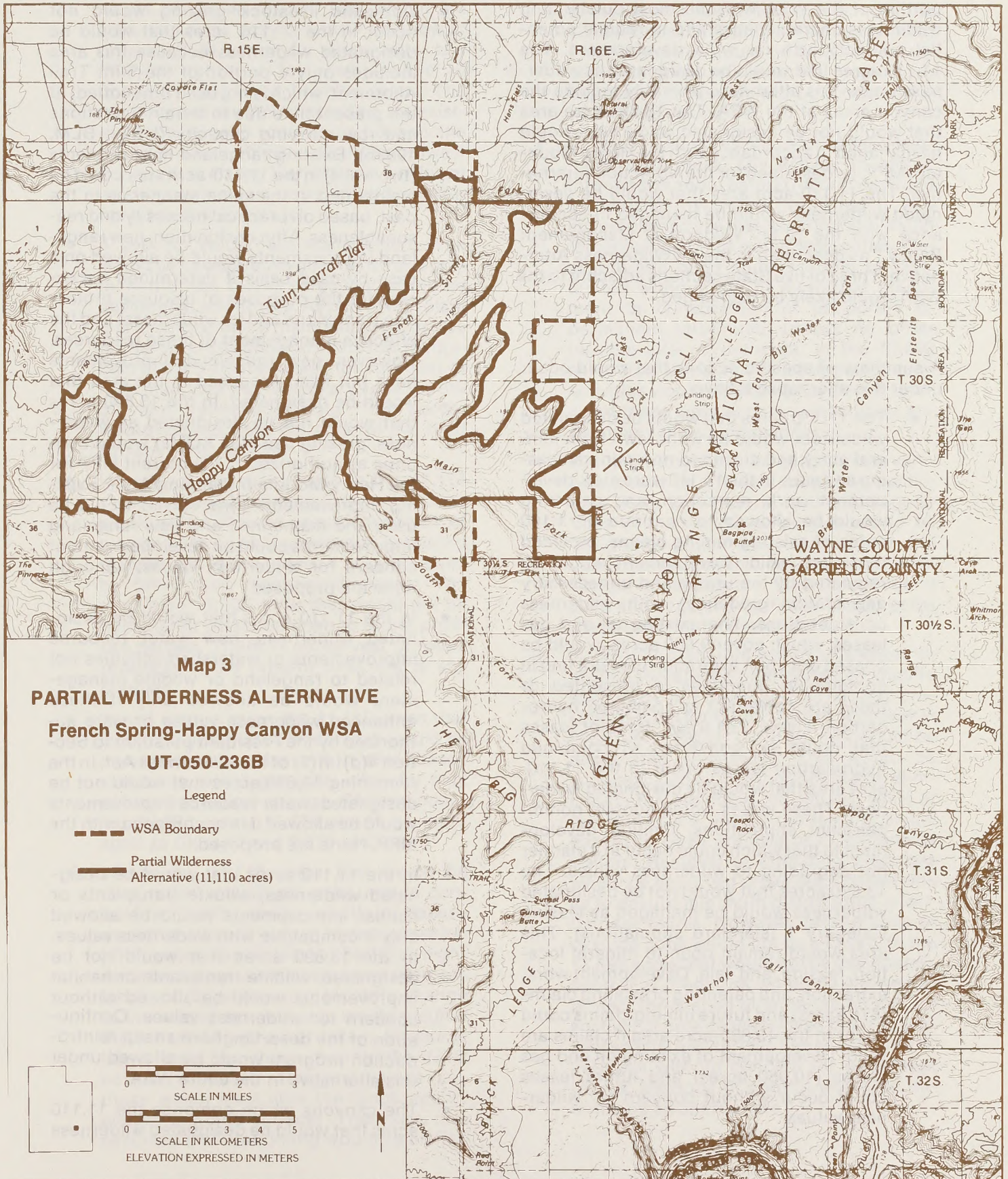
FRENCH SPRING-HAPPY CANYON WSA

- New water resource improvements or watershed activities not related to range-land or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life and property, or were authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). Two unimproved wells are located in this WSA, but no future water resources improvements are planned.
- New wildlife transplants and habitat improvements would be allowed after designation only if they are compatible with wilderness values. None are existing or planned in this WSA, except for continuation of desert bighorn sheep reintroduction in the general vicinity, primarily on NPS-administered land. It is anticipated that continuation of this reintroduction program would be allowed under this alternative.
- The entire area would be closed to ORV use except for (1) those users with valid existing rights, if approved by BLM in accordance with 43 CFR rules or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland improvements. About 8 miles of existing vehicular ways not leading to such approved improvements would not be available for vehicular use. About 16 miles (35 percent) of the WSA boundary follow existing unpaved roads, which would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the wilderness area. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- Harvest of forest products would not be allowed, except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any planned.
- Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the area would be taken in instances which (1) threaten human life, property, or high-value resources on adjacent nonwilderness lands; or (2) where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Because of this it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity to gather information about natural resources in the area would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating the offending individuals while at the same time posing the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only under conditions that would ensure minimum disturbance to wilderness values.

PARTIAL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, 11,110 acres of the French Spring-Happy Canyon WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that

FRENCH SPRING-HAPPY CANYON WSA



portion of the WSA with the most outstanding wilderness characteristics and to reduce potential conflicts with tar sand development. The 11,110 acres that would be designated as wilderness under this alternative primarily include the canyon areas of the WSA. The 13,890-acre area that would not be designated wilderness would be managed in accordance with the Henry Mountain MFP, as described for the No Action Alternative. The 11,110-acre area that would be designated wilderness would be managed in accordance with the BLM "Wilderness Management Policy," as described in the All Wilderness Alternative. Three of five State sections adjacent to the WSA would likely be exchanged.

A summary of specific actions that would occur under this alternative follows.

- The 11,110 acres that would be designated wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 11,110-acre area, development work, extraction, and patenting would be allowed to continue on 1,160 acres of existing mining claims, provided these are valid. Development would be regulated by the undue and unnecessary degradation guidelines with wilderness considerations. The existing oil and gas leases, which cover 9,500 acres, would be phased out upon expiration unless a find in commercial quantities is presented or these are converted to combined hydrocarbon leases. The 9,500 acres of leases that could be converted to combined hydrocarbon leases occur in the 11,110-acre area that would be designated wilderness. These leases would contain nonimpairment stipulations, limiting development to that which could occur in a manner not degrading to wilderness values. The 13,890 acres that would not be designated wilderness would be managed as leasing Category 1 (standard stipulations). This area would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting of existing claims (670 acres) and future mining claims could occur in the 13,890-acre area if claims are valid. Development of existing oil and gas leases (10,960 acres) and future leases could occur without concern for wilderness values.
- Domestic livestock grazing would not occur in the 11,110 acres that would be designated wilderness because this area includes only a portion of the Flint Trail Allotment, which is not used (unallotted) at the present time due to terrain limitations and low carrying capacity (USDI, BLM, 1983b). Existing rangeland improvements (two wells) in the 11,110-acre area could be maintained in the same manner as in the past, based on practical necessity and reasonableness. After designation, new rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources. However, new rangeland improvements have not been proposed in the area that would be designated. In the 13,890 acres that would not be designated as wilderness, grazing use (439 AUMs) would continue as authorized in the current MFP for the Henry Mountain Planning Area. Existing improvements (one corral) would be used and maintained and new rangeland improvements could be developed without concern for wilderness values, although none are proposed.
- In the 11,110 acres that would be designated wilderness, new water resource improvements or watershed activities not related to rangeland or wildlife management would be allowed only if these enhanced wilderness values or were authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act*. In the remaining 13,890 acres that would not be designated, water resource improvements would be allowed if in accordance with the MFP. None are proposed.
- In the 11,110 acres that would be designated wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the 13,890 acres that would not be designated, wildlife transplants or habitat improvements would be allowed without concern for wilderness values. Continuation of the desert bighorn sheep reintroduction program would be allowed under this alternative in the entire WSA.
- The canyons which comprise the 11,110 acres that would be designated wilderness

FRENCH SPRING-HAPPY CANYON WSA

would be closed to ORV use. Within the area, vehicular activity would be allowed only by BLM permit for users with valid mineral rights or for maintenance of approved rangeland improvements. The remainder of the WSA, including the existing unpaved jeep road which borders the WSA for about 10 miles on the southwest boundary in Happy Canyon and 8 miles of existing vehicular ways, would remain open to vehicular travel.

- A specific Wilderness Management Plan would be developed to govern use and protection of the 11,110 acres that would be designated wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would extend from the edge of the road surface up to 100 feet.
- Harvest of forest products in the 11,110 acres that would be designated wilderness would not be allowed, except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. The remaining 13,890 acres that would not be designated would be open to forest product harvest. There is no harvest of forest products at the present time, nor is any planned.
- Visual resources on the 11,110 acres that would be designated wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. Of the remaining 13,890 acres, 11,520 would be managed as Class IV and 2,370 as Class II.
- Within the 11,110 acres that would be designated wilderness, measures to control fire, insects, noxious weeds, or disease would be allowed only in instances which (1) threaten human life, property, or high-value resources on adjacent nonwilderness lands; or (2) where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those which least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited

to hand and aerial techniques. On the 13,890 acres that would not be designated, these measures could be taken in instances which threaten human life, property, or high-value resources without concern for wilderness values.

- In the 11,110 acres that would be designated wilderness, any activity to gather information about natural resources would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of wilderness values. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternatives exist. In the 13,890 acres that would not be designated, such activities would be allowed by permit, provided these were accomplished in an environmentally sound manner.
- Hunting without the use of motorized vehicles would be allowed subject to applicable State and Federal laws and regulations in the 11,110 acres that would be designated wilderness. Hunting with the use of motorized vehicles would be allowed subject to applicable State and Federal laws and regulations in the 13,890 acres that would not be designated.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock in the 11,110 acres that would be designated wilderness. This would be accomplished by methods directed at eliminating the offending individuals, while at the same time posing the least possible hazard to other animals or to wilderness visitors. Removal of offending predators would be approved under such conditions as to ensure minimum disturbance to wilderness values. However, poison baits or cyanide guns would not be allowed. In the 13,890 acres that would not be designated, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock without concern for wilderness values. Methods of control would be determined as appropriate.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

Air quality in French Spring-Happy Canyon WSA is designated as a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act as amended. Nearby Class I areas are at Canyonlands National Park (6 miles east) and Capitol Reef National Park (29 miles west). Local, regional, and distant pollutant sources do not alter the area's very good to excellent air quality and visibility. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979).

Geology

The WSA is located in the Canyonlands section of the Colorado Plateau Physiographic Province. The WSA lies along the southern limb of a large structural trough that separates the San Rafael Swell to the northwest from the Monument Upwarp to the southeast. The moderately deep Henry Mountains structural basins slope to the southwest.

Rocks at the surface of the WSA are of Permian, Triassic, and Jurassic Ages and belong to the following formations: the Moenkopi, Chinle, Wingate, Kayenta, Navajo, and Carmel. The overall structure of the WSA is a smooth, west-dipping homocline, disrupted slightly by a northwest-trending system of grabens that extends into the WSA from the vicinity of The Needles fault zone 10 miles to the southeast (Jackson, 1983).

Landforms in this WSA include mesas, buttes, spires, arroyos, rounded slickrock domes, sand dunes, alluvial fans and terraces, and sheer-walled, meandering, deeply cut canyons (600-1,000 feet deep).

Soils

About 56 percent of the WSA is sandstone rock outcrop and steep slickrock canyons. The remaining areas consist of semidesert sands, shallow sandy loams, and sandy bottom soils. Most of this area has a soil erosion condition rating of moderate. Erosion condition was determined using soil surface factors and is summarized in Table 2.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	7,680	31	20,736
Moderate	1.3	13,480	54	17,524
Slight	0.6	3,840	15	2,304
Stable	0.3	0	0	0
Total		25,000	100	40,564

Sources: USDI, BLM, 1982c; Leifeste, 1978.

Vegetation

The WSA lies within the Navajo Basin phytogeographic subdivision of southeastern Utah (Neese, 1981).

Fifty-six percent of the WSA consists of bare rock outcrops and steep slickrock canyons. Predominant vegetation in the remaining WSA includes pinyon-juniper, desert grass, and blackbrush communities in association with assorted shrubs and forbs.

There are no known threatened, endangered, or sensitive plant species in the WSA. Existing vegetation types are summarized in Table 3.

TABLE 3
Existing Vegetation Types

Existing Vegetation Types	Acres	Percent of WSA
Rock outcrop, sand	14,000	56
Pinyon, juniper	3,750	15
Middle grasses	3,250	13
Blackbrush	2,000	8
Assorted grasses, shrubs, forbs	2,000	8

Source: USDI, BLM, 1982c

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FRENCH SPRING — HAPPY CANYON WSA

Resource	Alternatives		
	No Action	All Wilderness (25,000 Acres)	Partial Wilderness Designation (11,110 Acres) (Proposed Action)
Geology	In situ tar sand development on 22,240 acres could cause extensive subsurface fracturing, subsidence, and rockfalls.	No effect is expected from 20 acres of mineral-related disturbance.	In situ tar sand development on 12,130 acres could cause subsurface fracturing, subsidence, and rockfalls.
Vegetation	Vegetation could be disturbed or denuded and may be permanently modified by mineral and energy exploration and development on up to 7,170 acres in the WSA.	Vegetation would not be significantly affected in the WSA.	Vegetation could be disturbed or denuded and may be permanently modified by mineral and energy exploration and development on up to 4,951 acres in the nondesignated portion.
Water Resources	Increased sedimentation in ephemeral drainages could result from increased erosion of up to 22,858 cubic yards per year from in situ tar sand development, which would also affect ground water in the WSA because of water requirements for up to 11,079 acre feet annually and water injection activities.	No significant effects on water resources are expected.	Increased sedimentation in ephemeral drainages could result from increased erosion of up to 13,368 cubic yards per year from in situ tar sand development, which would also affect ground water in the nondesignated area.
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 575 to 672 million barrels of oil from tar sand, 375 tons of uranium oxide, and 38,000 tons of copper.	Oil, gas, and tar sand likely would not be recovered. Assuming a worst-case analysis, copper and uranium recovery would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.	Although likelihood is low, up to 1.8 million barrels of oil, 10.2 billion cubic feet of natural gas, 237 to 447 million barrels of oil from tar sand, 280 tons of uranium oxide, and 28,000 tons of copper could be recovered.
Wildlife	About 37 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat. All of the desert bighorn sheep could be displaced.	Wildlife would benefit from solitude.	Wildlife in the designated area would benefit from solitude. Less than 1 percent of the desert bighorn sheep habitat would be adversely affected. About 36 percent of the nondesignated portion could be disturbed by energy and mineral exploration and development which could adversely affect wildlife habitat.
Livestock	Grazing of 439 AUMs and maintenance of existing developments would continue. New developments could be constructed; however, none are now proposed.	Grazing of 439 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. New developments proposed in the future may not be allowed.	Effects would be about the same as for the All Wilderness Alternative, except that proposed new developments might be allowed in the nondesignated area.

FRENCH SPRING-HAPPY CANYON WSA

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FRENCH SPRING — HAPPY CANYON WSA

Resource	Alternatives		
	No Action	All Wilderness (25,000 Acres)	Partial Wilderness Designation (11,110 Acres) (Proposed Action)
Visual Resources	The quality of visual resources could be impaired on up to 9,170 acres.	Visual quality could be impaired on up to 20 acres.	Visual quality could be impaired on up to 4,960 acres, including 9 acres in the designated portion. About 82 percent of the Class A scenery would be in the designated portion and would be protected by the reduced potential for disturbance.
Recreation	ORV use would continue on 8 miles of ways at current low levels. Overall recreational use could increase from the present 20 visitor days per year to 30 over the next 20 years. Up to 9,170 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 8 miles of ways, would be closed to ORV use. Primitive recreation could increase by an undetermined amount due to publicity associated with wilderness designation.	ORV recreational use could continue on 8 miles of ways in the nondesignated portion.
Wilderness Values	Wilderness values could be lost on up to 9,170 acres (37 percent of the WSA). This could result in a loss of wilderness values throughout the WSA and in adjoining WSAs.	Wilderness values would be protected, except on 20 acres (less than 0.1 percent of the WSA) which may be disturbed by development of valid mineral rights.	Wilderness values would be protected, except on 9 acres which could be disturbed by development of valid existing rights. Additional impairment could be expected on 36 percent of the 13,890 acres not designated. Overall, wilderness values could be lost on about 20 percent of the WSA. However, all of the areas meeting the standards for naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive recreation would be in the designated area and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be consistent with the <i>Wayne and Garfield County Master Plans</i> , State of Utah plans and policies, and the BLM Henry Mountain MFP. It would not complement NPS plans and proposals.	This alternative would not be consistent with Wayne and Garfield Counties' concepts of multiple use. It would be consistent with State policy if lands were exchanged, and would complement NPS proposals. Designation would constitute amendment of the BLM Henry Mountain MFP.	Partial designation would be the same as for the All Wilderness Alternative, except that the portion not designated would be consistent with Wayne and Garfield Counties' concepts of multiple use. No State land would be exchanged.

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FRENCH SPRING — HAPPY CANYON WSA

Resource	Alternatives		
	No Action	All Wilderness (25,000 Acres)	Partial Wilderness Designation (11,110 Acres) (Proposed Action)
Socio-economics	Annual local sales of less than \$22,122 and Federal revenues of up to \$62,299 would continue. An additional \$13,620 per year in Federal revenues could be derived from leasing of presently unleased areas. The impacts on social and economic conditions would be significant if tar sand were developed.	Annual local sales of less than \$22,122 and Federal revenues of up to \$920 would continue, but Federal revenues of up to \$75,000 from mineral leasing would be foregone. The opportunity for future energy and mineral development and economic benefits would be reduced in the WSA.	The effects of this alternative would be the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$33,330 and tar sand could be developed in the nondesignated portion.

The French Spring-Happy Canyon WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the WSA are listed on Table 4. PNV is the vegetation types that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	11,000	44
Galleta-three awn shrubsteppe	14,000	56

Source: USDI, Geological Survey, 1978.

Water Resources

The WSA is not considered a major water-producing area. There is one spring located in the French Spring fork of Happy Canyon. No data are available on quantity or quality of the spring. The spring is used by wildlife and occasionally by livestock. There are no perennial streams, and all local drainages are ephemeral.

There are two unimproved wells located in Happy Canyon in Sections 13 and 23 of Township 30 South, Range 15 East. No data are available on quantity and quality of water in the wells. However, quality of water in similar wells (White Rim Sandstone aquifers) are of fair quality with a total dissolved solids (TDS) range of 500 to 3,000 parts per million (ppm).

Ground water typically occurs in the older rocks at or below canyon floors, but perched bodies of water also occur on and beneath mesas. Ground water occurring in rocks of Permian and younger age is potentially usable as potable supply and as tar sand process water. Sparse data on ground water associated with Pennsylvanian and older rocks in the Tar Sand Triangle STSA indicate that it is saline to briny in quality (Utah Department of Natural Resources, 1981).

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah inde-

pendently assessed for its mineral and energy resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is low to moderate mainly due to the generally unfavorable geologic environment. An overall importance rating (OIR) of 2+ was assigned to the French Spring-Happy Canyon WSA by SAI (1982). The OIR is given on a scale of 1 to 4 where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report for the WSA. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

All resources were assigned favorabilities of f2 or less with the exception of the tar sand resource. The energy and mineral resource rating summary is given in Table 5.

TABLE 5
Energy and Mineral Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels; less than 60 million cubic ft. (gas)
Tar sand	f4	c4	10 to 13 billion barrels of oil
Copper	f2	c1	Less than 50,000 tons
Uranium	f2	c1	Less than 500 tons of uranium oxide concentrate
Coal	f1	c4	None
Geothermal	f1	c4	None
Gold	f1	c3	Little to none
Silver	f1	c3	Little to none

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand. There is almost no potential for silver in the WSA.

LEASABLE MINERALS

There are no known deposits of leasable minerals in the WSA, with the exception of the tar sand resource. There are no current exploration, drilling, or mining activities for leasable minerals. None of the leases show evidence of commercial quantities nor is any evidence expected prior to designation.

Oil and Gas

Approximately 20,460 acres of the WSA are under oil and gas lease with application for conversion of combined hydrocarbon leases. Approximately 19,540 acres of these leases are pre-FLPMA and 920 acres are post-FLPMA (USDI, BLM, 1984b). Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases. If the oil and gas leases become combined hydrocarbon leases, they would be considered as new post-FLPMA leases.

The entire WSA is in Category 1 (open to leasing with standard stipulations).

Based on the geographic location of this WSA in the Paradox Basin and geologic inference, this WSA has low potential for the occurrence of oil and gas (Jackson, 1983). None of these leases currently show commercial quantities. The oil and gas rating of f2/c1 indicates that there would be less than 10 million barrels of oil or 60 billion cubic feet of natural gas in-place with less than 3 million barrels of oil or 18 billion cubic feet of natural gas recoverable. Refer to Appendix 6 for estimates of recoverability.

Tar Sand

Tar sand deposits occur principally in the White Rim Sandstone of Permian Age (Campbell and Ritzma, 1979). The thickness of the White Rim Sandstone beneath the entire WSA varies from 250 to 400 feet (Jackson, 1983). The White Rim Sandstone is known over a broad region for its excellent reservoir characteristics (Campbell and Ritzma, 1979).

The Tar Sand Triangle STSA is estimated to contain 12.5 to 16 billion barrels of oil in-place (Campbell and Ritzma, 1979). About 22,480 acres or 14 percent of the Tar Sand Triangle STSA is within the French Spring-Happy Canyon WSA. Assuming that the resource is evenly distributed throughout the STSA, the WSA contains between 1.75 and 2.24 billion barrels of oil in-place. Estimates based on past study indicate that approximately 30 percent of the in-place oil could be recovered by in-situ methods. Therefore, 525 to 672 million barrels of recoverable oil could be within the WSA. It is estimated that within the Tar Sand Triangle STSA there is a potential for oil production of 70,000 barrels per day (BPD) of oil for 330 days a year for 130 years (USDI, BLM, 1984c). There are approximately 20,460 acres under lease conversion application (application for conversion of oil and gas leases to combined hydrocarbon leases).

LOCATABLE MINERALS

Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809), with consideration given to protection of wilderness values. After wilderness designation, all other lands (including claims not determined valid) within wilderness would be closed to prospecting and exploration (USDI, BLM, 1981b). There are no known commercial deposits of locatable minerals in this WSA.

Locatable minerals with a probability of occurring in the area would be almost exclusively uranium minerals occurring in the Chinle Formation of Triassic Age, which underlies the entire WSA at a depth of 1,500-2,000 feet. The WSA lies within an area containing relatively few uranium deposits (SAI, 1982). Uranium is considered a speculative undiscovered resource.

If uranium is present, there would be potential for copper within the WSA because of its close association with uranium. As shown in Table 5, the potential copper deposits would total up to 50,000 tons and the potential uranium deposits would total up to 500 tons of uranium oxide. Production of by-product copper from mining in this part of the Colorado Plateau chiefly occurs around Moab, Utah.

The WSA has almost no potential for gold and silver (SAI, 1982).

Currently, there are 89 mining claims in the WSA, involving 1,830 acres, staked primarily for uranium and copper. No claim is currently producing commercial quantities. Validity determinations for claims must be made on a case-by-case basis. The favorability and certainty ratings indicate that no claim is likely to be determined valid.

SALABLE MINERALS

There are no commercial deposits of salable minerals in the WSA. There are scattered deposits of sand and gravel. However, sand and gravel are common in the area, and there are deposits closer to existing and possible future market areas.

Wildlife

Several species of wildlife may be found in the WSA. These include mule deer, antelope, chukar, dove, and cottontail. Other species occasionally seen include fox, coyote, badger, weasel, bobcat,

other small animals (such as the side-blotched lizard), as well as a few species of birds. The WSA contains about 2 percent of the habitat for Deer Herd Unit 29. This herd unit covers the San Rafael Desert; however, distribution and abundance of deer are principally along the river bottoms, especially the Price River, all of which are outside the WSA (Utah Division of Wildlife Resources [UDWR], 1977).

The area also provides less than 15 percent of the habitat for Antelope Herd Unit 9. This herd is widely scattered and is limited by the availability of water (UDWR, 1982). Pronghorn antelope need up to 1.2 gallons of water per animal per day during the peak of summer (Salwasser, 1980). Also, most pronghorn antelope are found within 4 miles of a water source.

UDWR introduced desert bighorn sheep onto the nearby Orange Cliffs in 1982. The WSA contains historic habitat for this species. UDWR has identified about 11,110 acres of this WSA (44 percent) as substantial value yearlong bighorn sheep range. (Substantial value habitat is a low to high use area for wildlife that is of high interest to the State of Utah. Refer to the Glossary for a complete definition.) Some of these animals may migrate into the area. However, the lack of water is the single most limiting factor for bighorn sheep herds in the desert (Monson and Sumner, 1980). As previously stated, there is only one spring in the WSA, and the amount of water produced is not known.

There is one endangered species that may occasionally inhabit the area, the peregrine falcon (*Falco peregrinus*). Seven species of wildlife that BLM considers sensitive may be found in the WSA from time to time. These are listed in Table 6.

There is no critical habitat within the WSA. There are no existing wildlife improvements, and none are planned.

TABLE 6
Sensitive Species

Sensitive Species	Scientific Name
Many-lined skink	<i>Eumeces multivirgatus</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Bell's Vireo	<i>Vireo belli</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Dwarf Shrew	<i>Sorex nanus</i>
Spotted Bat	<i>Euderma maculata</i>
Chuck walla	<i>Saceromalus obesus</i>

Source: USDI, BLM, 1982c

Forest Resources

There are no significant forest values in this WSA. While 15 percent of the WSA is classified as pinyon-juniper vegetation type, the trees are scattered and generally poor in quality. Also, locations are remote from users, and access is poor. There has been no use of the resource nor is any anticipated.

Livestock and Wild Horses/Burros

The WSA provides forage for cattle in the Twin Corral Flats and Gordon Flats areas. Rangeland improvements include one corral and two unimproved wells. The canyons are essentially ungrazed because of unaccessibility and lack of forage. No areas within the WSA have been identified for rangeland improvements for livestock benefits; however, a grazing system has been proposed. The proposed system involves herding and movement of cattle but no additional surface-disturbing activities.

Portions of two grazing allotments, Robbers Roost and Flint Trail, fall within the boundaries of the WSA. The WSA includes 10 percent of the total AUMs of the two allotments involved. Table 7 gives grazing use data on these allotments.

No wild horses or burros are known to exist in the WSA.

TABLE 7
Grazing Use Data

	Allotments	
	Robbers Roost	Flint Trail
Permittees	1	Unallotted Area ¹
Type of Livestock	Cattle	Cattle
Period of Use	Yearlong	1
Percent of Allotment	8	10
Area in WSA		
Estimated Available	439	218
Livestock Forage in WSA (AUMs)		
Percent of Allotment's	8	5
Livestock Forage within WSA		

Source: USDI, BLM, 1983b.

¹This allotment is not allotted for livestock grazing but may be used on a temporary, as-needed basis while other allotments are being rehabilitated or under an emergency situation.

Visual Resources

The WSA has excellent scenic values. Over half was rated in the highest scenic quality class. The Twin Corral Flats portion of the WSA consists of a

broad, gently rolling benchland mesa covered with grass and scattered pinyon-juniper trees. Happy Canyon and French Spring Canyon deeply and abruptly cut the mesa with sheer-walled, meandering canyons. These are characterized by colorful rock formations and sheer cliffs to the canyon bottoms (600-1,000 feet below the mesa) and rounded slickrock domes. Other landforms include buttes, spires, arroyos, rockfalls, alluvial fans and terraces, and sand dunes. The area is not visible from any major travel route. A dirt four-wheel drive travel route borders the WSA on the south side. A principal dirt road to Canyonlands National Park and Glen Canyon NRA runs along the north and east sides of the WSA.

The BLM Visual Resource Evaluation System rated the WSA's visual characteristics as shown in Table 8. The Scenic Quality Class A and VRM Class II areas consist of the canyon and rim portions of the WSA. The mesa portions constitute the other classes. (The BLM's VRM system is explained in Appendix 7.)

TABLE 8
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	13,480	54
Class B	8,320	33
Class C	3,200	13
Management Class		
Class I	0	0
Class II	13,480	54
Class III	0	0
Class IV	11,520	46

Source: USDI, BLM, 1974.

Cultural Resources

There are numerous lithic scatters throughout the WSA, located mainly on ridge tops above the canyons. There are no recorded historical sites in the WSA. Limited inventory has been done in the area, but there is a good potential for finding sites in the canyon bottoms.

There are no known sites in the WSA listed or potentially eligible for listing on the National Register of Historic Places.

Recreation

Of the fifteen recreational opportunities evaluated for their quality in this WSA, 12 opportunities

are present in varying degrees. One activity, geological sightseeing, is of outstanding quality. Three activities (photography, scenic sightseeing, and dayhiking) are of average quality. Backpacking, camping, horseback riding, hunting, nature study, rockhounding, and archaeological and wildlife sightseeing are rated below average (fair to poor).

About 8 miles of vehicular ways in the WSA are available for ORV use even though there is very little ORV use in the area.

Geological sightseeing is considered outstanding because of the many geologic features present, including sheer cliffs, spires, entrenched canyons with rich color variations, and arroyos. These features also provide good opportunities for scenic sightseeing and photography from the canyon rims. Dayhiking opportunities are good within the WSA: the longest hiking routes are approximately 9.8 and 11.1 miles, with an additional 3 miles in Glen Canyon NRA on one route. Hiking routes through the main and side canyons total approximately 31 miles. Backpacking and camping opportunities were rated below average in quality due to lack of water and attractive campsites and the size and configuration of the area.

There are no data available on recreation use; however, based on management observations, use is low (estimated at only 20 visitor days a year) due to limited access and publicity and the presence of adjacent high quality recreational resources (i.e., Glen Canyon NRA and Canyonlands National Park). Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980.

Wilderness Values

SIZE

This WSA is located immediately east of the Dirty Devil and south of the Horseshoe Canyon (South) WSAs. Its eastern boundary is the Glen Canyon NRA. The WSA contains approximately 25,000 acres of Federal land and is about 7 miles wide (east to west) and 6 miles long. This WSA's configuration is irregular, following a road on the meandering Happy Canyon on the south, roads on the west and north, and the Glen Canyon NRA boundary on the east.

NATURALNESS

The WSA has no significantly noticeable human intrusions. There are approximately 8 miles of ways on Twin Corral and Gordon Flats which are substantially unnoticeable and rehabilitating by

natural means. The only other intrusions are one corral and two unimproved wells in French Spring and Happy Canyon. The WSA is bordered on the south by a four-wheel drive road which is outside the WSA. Old airstrips are located to the south and east of the WSA. Intrusions were judged substantially unnoticeable in the area as a whole.

SOLITUDE

The WSA has meandering canyons 600 to 1,000 feet deep. Other topography offers outstanding opportunities for solitude. Vegetation screening is very light in the canyon bottoms. Above the canyon rim on rolling mesas vegetated with grasses and scattered pinyon, opportunities for solitude are less than outstanding. There are no sights and sounds adversely affecting opportunities for solitude. The large size of the WSA and low recreational use contribute to the opportunities present. Opportunities for solitude are outstanding in French Spring and Happy Canyon (approximately 11,000 acres) but less than outstanding on the remaining 14,000 acres.

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the various recreational opportunities present, and evaluation of the quality of those opportunities. As discussed in the Recreation section, this WSA was determined to have outstanding opportunities for one activity, geological sightseeing, in the canyons. Photography, dayhiking, and scenic sightseeing were rated as average in quality. The longest hiking route is 11.1 miles from Gordon Flats to Happy Canyon via French Spring Canyon. Recreational opportunities are somewhat restricted by topography: mesas limit these opportunities. Thus, in the canyon portions, there are about 11,000 acres with outstanding recreational opportunities (same 11,000 acres that offer outstanding opportunity for solitude), but on the remaining 14,000 acres (consisting of mesas) opportunities are less than outstanding.

SPECIAL FEATURES

The WSA possesses exceptional scenic values.

Land Uses Plans and Controls

There are no private in-holdings, private subsurface rights, or rights-of-way in the WSA. All lands within the WSA are Federally owned, except for one State section. The management philosophy

for State school sections is to maximize economic returns for the State School Fund. These sections are under lease for oil, gas, and grazing.

The *Final Report, Wayne County Master Planning Project* (Call Engineering, 1976) does not address this area specifically, but generally recommends that "... open spaces be used for many purposes rather than strictly as wilderness areas." It also states "... outstanding natural landmarks should be preserved as much as possible."

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers portions of this WSA. The master plan recognizes that the county possesses "... some of the most spectacular scenery in the United States ... The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in 3 WSAs and 31,600 acres on one Forest Service unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the French Spring-Happy Canyon WSA, be retained for multiple uses. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The WSA is managed under the BLM Henry Mountain Planning Area MFP (USDI, BLM, 1982c) which allows multiple uses as described in the No Action Alternative. The Henry Mountain Planning Area MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

The WSA is adjacent to Glen Canyon NRA. The NPS has proposed that NRA land in this area be classified as a Recreation and Resource Utilization Zone. (This zone would allow grazing and mining activities.)

Socioeconomics

DEMOGRAPHICS

The WSA lies within the boundaries of Wayne and Garfield Counties, two of Utah's least populated and most rural counties. In 1980, the Wayne County population was 1,911, reflecting a population density of 0.77 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1983, and University of Utah, Bureau of Economic and Business Research, 1979). In 1980, the Garfield County population was 3,673, reflecting a population density of 0.71 persons per square mile (USDC, Bureau of the Census, 1983 and University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Hanksville, a small community of approximately 351 people, located about 53 road miles to the northwest. Green River, about 63 road miles north of the WSA in Emery County, is a main gateway and service area for visitors to the French Spring-Happy Canyon area.

EMPLOYMENT

Wayne and Garfield Counties are two of the poorest counties in the State of Utah (South et al., 1983). Government employment represents the largest employment sector within Wayne County with agriculture a close second and a dominant economic activity of the area. Nonfarm proprietors represent the third largest sector of Wayne County employment (refer to Table 9). Wayne County has some tourism and lumber activities; however, the principal commercial center is Richfield, Utah, located in Sevier County (South et al., 1983).

TABLE 9
1980 Employment
Wayne and Garfield Counties, Utah

Industrial Sector	Wayne County		Garfield County	
	Number	Percent	Number	Percent
Agriculture	191	25	236	11
Mining	9	1	210	10
Construction	84	11	379	17
Manufacturing	37	5	248	11
Transportation, Communication, and Utilities	3	--	85	4
Wholesale and Retail Trade	42	5	125	6
Finance, Insurance, and Real Estate	12	2	16	1
Services	31	4	266	12
Government	207	27	457	21
Nonfarm Proprietors	152	20	157	7
Total	768	100	2,179	100

Sources: Utah Department of Employment Security, 1980; USDC, Bureau of Economic Analysis, 1982.

Garfield County lies at the southern boundary of this WSA and serves as its southern gateway. Government is the largest employment sector within the county and represents 21 percent of the work force followed by construction, services, manufacturing, and agriculture. The county, however, maintains a diversified economic base (South et al., 1983). The Town of Escalante relies on farming, stockraising, and lumbering, supplemented by tourism, some oil production, and government employment (South et al., 1983). Another town, Boulder, continues to rely on agriculture.

INCOME AND REVENUES

In 1980, the nonfarm industry sector in Wayne County produced nearly 89 percent or \$7.3 million of total labor and proprietors' income within the county. This represented an annual growth rate of 17.4 percent between 1975 and 1980, and higher than the 13.9-percent growth rate experienced by the State (refer to Table 10). Within this total income, the private sector produced, mainly from mining and construction, about 72 percent of these earnings and the government sector, about 28 percent. Farm labor and proprietors' income totaled \$0.9 million or 11.1 percent of total personal earnings (University of Utah, Bureau of Economic and Business Research, 1982).

In Garfield County, the nonfarm industry sector in 1980 produced over 96 percent of total labor and proprietors' income representing an annual growth rate of approximately 22 percent (University of Utah, Bureau of Economic and Business Research, 1982) (refer to Table 10). Almost 80

percent of this income came from the private sector, principally mining, construction, and manufacturing, while government sources produced approximately 20 percent of personal income and earnings for the county. Farming produced 3.8 percent of the county's total personal income amounting to \$949,000.

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 11 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

The WSA has 89 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

TABLE 10
1980 Personal Income and Earnings
Wayne and Garfield Counties, Utah

Type/Source	Wayne County		Garfield County	
	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietor's Income (Earnings)	8,245	17.5	24,792	21.9
Total Labor and Proprietor's Income by Industry Source				
Farm	917	17.8	949	16.6
Nonfarm	7,328	17.4	23,843	22.2
Private	5,268	22.7	19,049	26.5
Agriculture	81	(D)	79	(D)
Service and Other Mining	(D)	(D)	4,222	47.0
Construction	(D)	(D)	5,536	66.5
Manufacturing	291	4.1	3,294	14.2
Transportation and Public Utilities	183	0.9	15,545	16.8
Wholesale Trade	69	1.8	96	1.3
Retail Trade	496	3.4	1,302	7.6
Finance, Insurance and Real Estate	(D)	(D)	189	(D)
Services	416	11.1	2,786	16.3
Government	2,060	8.2	4,794	10.8

Sources: USDC, Bureau of Economic Analysis, 1982; University of Utah, Bureau of Economic and Business Review, 1982.

TABLE 11
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Mining Claim Assessment	Less than \$8,900	None
Oil and Gas Leases	None	\$61,380
Livestock Grazing	\$13,140	\$919.80
Recreational Use	Less than \$82	None
Total	Less than \$22,122	Up to \$62,299

Sources: BLM Files; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

²A few commercial permits have been issued since 1980.

One livestock operator has a total grazing privilege of 439 AUMs within the WSA. One unallotted allotment is estimated to contain 218 AUMs that are utilized intermittently. If all forage in the WSA were utilized, it would account for \$13,140 of livestock sales and \$3,285 of ranchers' returns to labor and investment.

The WSA's recreational use is low. Related local expenditures are low and are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for French Spring-Happy Canyon WSA is estimated as about 20 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Garfield and Wayne Counties.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 11).

Oil and gas (including tar sand) leases in the WSA cover approximately 20,400 acres. At \$3 per acre, lease rental fees generate up to \$61,380 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the 657 AUMs in the WSA could potentially be used. Based on a \$1.40 per

AUM grazing fee, the WSA can potentially generate \$919.80 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of range-land improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines For All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, tar sand, uranium, and copper exploration and development. The area would be open to resource use and development without controls for wilderness protection. The magnitude of development is unknown but would probably be low due to the WSA's rough terrain, low resource potential for most minerals, and low probability of economic recovery of tar sand. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and cause the following disturbance: tar sand, 8,990 acres; oil and gas, 160 acres; and uranium and copper, 20 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

The effects of tar sand development under the No Action Alternative would be extensive and cannot be analyzed fully in this document. A brief introduction to the effects of tar sand development in the WSA is included. For more information on the impacts of tar sand development in the French Spring-Happy Canyon WSA, the reader is referred to the *Tar Sand Triangle Draft EIS* (USDI, NPS and BLM, 1984) and the *Utah Combined Hydrocarbon Leasing Regional Final EIS* (USDI, BLM, 1984c).

AIR QUALITY

Under this alternative, none of the WSA would be designated wilderness. All 20,460 acres in the WSA under lease conversion application that are also part of the overlapping Tar Sand Triangle STSA would remain open to development. The probability of economic development is low at this time because of economic constraints.

The WSA would continue to be managed by the State of Utah as a PSD Class II area. Disturbance from locatable mineral and conventional oil development would have little effect on the air quality of the area. However, if tar sand development occurs in the Tar Sand Triangle STSA, industry plans of operation for the area include a commercial-scale upgrading plant and in-situ field that would produce pollutant emissions and hydrocarbon odors similar to a conventional oil refinery and well field (USDI, NPS and BLM, 1984). These emissions would consist of total suspended particulates, sulfur dioxide, carbon monoxide, and volatile organic components that would cause a localized decrease in visibility during the life of the operation, with a potential loss in visual range in the vicinity of Canyonlands

National Park. However, the WSA would continue to be managed by the State of Utah as a PSD Class II area, and air quality could be reduced only up to the PSD Class II limitations. Also, the proximity of the WSA to Canyonlands National Park may result in further restriction of tar sand development to meet PSD Class I limitations. Disturbance of 9,170 acres in the WSA would result in increases in fugitive dust emissions with additional potential for loss in visual range in the vicinity of Canyonlands National Park.

GEOLOGY

Excavation of locatable minerals (i.e., uranium and copper) would only occur on up to 20 acres and would not affect the area's geology. Also, slight surface disturbance on up to 160 acres from oil and gas exploration and development activities would not significantly affect geology. Development of tar sand on 22,480 acres of the Tar Sand Triangle STSA by in-situ methods could result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rockfall on ledges in the WSA (USDI, NPS and BLM, 1984).

SOILS

It is estimated that up to 9,170 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with critical and moderate erosion classes (worst-case analysis) and that erosion condition would increase one class, soil loss on the 9,170 acres would increase from 22,673 cubic yards/year to 45,495 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual soil loss from surface disturbance in the WSA would increase an estimated 22,858 cubic yards/year (56 percent).

VEGETATION

Approximately 56 percent (14,000 acres) of the WSA consists of bare rock outcrops and steep slickrock canyons. Forty-four percent (11,000 acres) of the WSA is vegetated with pinyon, juniper, middle grasses, blackbrush, and assorted grasses, shrubs, and forbs. Assuming the worst-case situation for purposes of analysis, the anticipated maximum acres disturbed (7,170) could denude the WSA's sparse vegetation if all the surface disturbance occurred in the vegetated areas of the WSA. If this development occurred, rehabilitation of the area to its former condition might be impossible, possibly causing

portions of existing and PNV types to be permanently modified through scarring of the landscape. However, management would be provided through the Henry Mountain Planning Area MFP, which would not allow disturbance of this magnitude to occur to the sparse vegetation within the WSA without mitigative measures.

WATER RESOURCES

Extensive tar sand development could disrupt the recharge area of the spring in the French Spring Fork or Happy Canyon. Any loss of available water in this area would be considered serious. Increased erosion of up to 22,858 cubic yards/year could increase sedimentation in the ephemeral drainages of the WSA. The amount of sediment would depend on such variables as where the disturbance occurred, the intensity of wind and rainstorms during vulnerable periods, and the effectiveness of erosion control measures and reclamation. Since precipitation is low and all streams in the WSA are ephemeral, there would not be significant effects on surface water quality.

Development of ground water for a tar sand industry could occur. Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

The water requirement for a 70,000-BPD tar sand industry in the Tar Sand Triangle STSA would be 11,079 acre feet/year for 130 years (USDI, BLM, 1984c). That portion of the WSA under lease conversion application covers 20,460 acres (approximately 25 percent of the STSA) and, under this alternative, could be developed. Development of ground water could occur within the WSA to help meet water requirements for tar sand production on the WSA or on adjacent areas.

In-situ tar sand injection activities within the WSA and on adjacent areas would lower the quality of ground water within the WSA (USDI, NPS, and BLM, 1984).

MINERAL AND ENERGY RESOURCES

Under this alternative, up to 9,170 acres of surface disturbance could occur from all mineral and energy activities, primarily from tar sand exploration and development activities. Appendix 10 lists surface disturbance assumptions and estimates.

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place (3 million recoverable) or up to 60 billion

cubic feet of natural gas (18 million cubic feet recoverable) exists within the WSA. These oil and gas resources could be explored and developed, subject to Category 1 stipulations, and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size of these deposits, no development is expected under this alternative.

Tar Sand

The tar sand resource in the French Spring-Happy Canyon WSA (22,480 acres of the Tar Sand Triangle STSA) could be explored and potentially developed in the future and would not be affected by this alternative. It is estimated that the WSA contains 1.75 to 2.24 billion barrels of oil (bitumen) with 525 to 672 million barrels potentially recoverable. The likelihood of production of oil from tar sand is thought to be low within the WSA because of economic constraints, even though large tar sand deposits are known to occur in the area. If fully developed, approximately 8,990 acres would be disturbed in the WSA by tar sand development activities.

Locatable Minerals

Locatable mineral development work, extraction, and patenting could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposit of up to 50,000 tons of copper and up to 500 tons of uranium oxide could be developed. Approximately 20 acres would be disturbed due to exploration and development of these locatable mineral resources. However, the likelihood of locatable mineral development is thought to be minimal because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Overall, under this alternative, wildlife would be negatively affected due to the surface disturbance on about 9,170 acres from mineral and energy exploration and development. This would disrupt wildlife populations and result in mobile species leaving the disturbed area for the duration of these activities. Some species would either perish or coexist with the disturbances at smaller and less viable population levels. One hundred percent of the substantial value yearlong desert bighorn sheep range (11,110 acres) in the WSA would be disturbed; therefore, bighorn sheep would leave the area and would not become established. Some sensitive species, such as Bell's vireo and golden eagle, would avoid the

disturbed area but, overall, would not be adversely affected. Others, such as the dwarf shrew, would probably perish. The peregrine falcon, an endangered species which may occasionally inhabit the area, would probably avoid the disturbed area for the duration of the mineral exploration and development activities.

Following mineral development and production, wildlife could benefit from development of water sources that could be completed without consideration of wilderness values (none are currently planned).

FOREST RESOURCES

There are few trees (scattered pinyon and juniper) in the WSA and no present or anticipated harvest of these trees other than occasional use by recreationists. Therefore, no additional harvest of forest resources is expected under this alternative. Disturbance of 9,170 acres for mineral and energy exploration and development could destroy the scattered patches of pinyon and juniper in the WSA. This would not be a significant loss of forest products due to the limited nature of the resource in the WSA.

LIVESTOCK

Under this alternative domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The grazing system proposed for the Robbers Roost Allotment would continue to be considered and could be implemented. Additional roads and other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values; however, none are proposed and few, if any, changes in livestock management techniques are expected.

The 439 AUMs currently allocated in the WSA, 8 percent of the Robbers Roost Allotment, are controlled by one livestock permittee. The 218 AUMs (10 percent of the Flint Trail Allotment) are located in an unallocated area. Surface disturbance of 9,170 acres from mineral and energy exploration and development could reduce available forage for cattle for a minimum of 5 years (USDI, NPS and BLM, 1984). If all 9,170 acres of disturbance were within the Robbers Roost Allotment, about 3 percent of the forage in the allotment could be disturbed and/or destroyed, thus reducing the available AUMs if development of this magnitude occurred. Following reclamation of disturbed areas, additional forage could be available for livestock.

VISUAL RESOURCES

Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 9,170 acres of surface disturbance from mineral and energy exploration and development would be degraded and VRM Class II management objectives would probably not be met during the short term. After rehabilitation, visual resources would be restored to meet VRM Class II objectives. Loss of visual quality associated with vegetation removal for tar sand development would be unavoidable and would persist for 70 years or longer (USDI, NPS and BLM, 1984). With tar sand development, visual quality would be significantly reduced in the area as a whole.

CULTURAL RESOURCES

Disturbance of 9,170 acres by mineral exploration and development under this alternative could affect cultural sites, mainly lithic scatters, in the WSA. Inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would lessen impacts. The overall effect on cultural resources would be low due to the limited amount of cultural resources in the area and mitigating measures that would be taken prior to surface-disturbing activities. In the future vandalism of sites (not currently a problem) would be expected to increase in proportion to the general population increase. Tar sand development that could occur under this alternative would lead to even greater increases in visitation and associated vandalism of cultural resources (USDI, NPS and BLM, 1984).

RECREATION

Under this alternative, up to an estimated 9,170 acres (37 percent of the WSA) could be disturbed by energy (tar sand) and mineral exploration and development. Those disturbances (roads, drill pads, pipelines, etc.) would result in a loss of most of the WSA's primitive recreation values (geologic sightseeing, hiking, horseback riding, etc.). Tar sand development in the Tar Sand Triangle STSA in and near French Spring-Happy Canyon WSA would also degrade primitive recreational values in the adjoining Dirty Devil, Horseshoe Canyon (South), and Fiddler Butte WSAs, and the proposed wilderness in Glen Canyon and Canyonlands National Park where there would be increases in sounds and airborne emissions and possible reductions in visual range (USDI, NPS and BLM, 1984). Anticipated population increases and improved access into the Tar

Sand Triangle STSA related to tar sand development could increase recreational use within the area as much as 950 percent (USDI, NPS and BLM, 1984). The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. Without tar sand development the rate of recreational use could increase from 20 current visitor days per year to 30 visitor days at the end of 20 years. With tar sand development the WSA would not be used for primitive recreation because of degradation of primitive recreation values. Approximately 8 miles of vehicular ways would be available for ORV use, although ORVs are presently used very little in the WSA.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Henry Mountain Planning Area MFP. Potential mineral and energy exploration and development could disturb an estimated 9,170 acres (37 percent of the WSA). This would result in loss or severe degradation of naturalness, outstanding opportunities for solitude and primitive recreation values, geologic sightseeing, and scenic values (a special feature) on 11,000 acres. On the remaining 14,000 acres, where those values were rated lower, those developments would also degrade wilderness values. Tar sand development in the Tar Sand Triangle STSA in and near the French Spring-Happy Canyon WSA would degrade wilderness values in the adjoining Dirty Devil and Horseshoe Canyon (South) WSAs. Also affected would be Fiddler Butte WSA and proposed wilderness in Glen Canyon NRA and Canyonlands National Park where sounds and airborne emissions from the energy and mineral developments would degrade solitude, visibility, and primitive recreational values (USDI, NPS and BLM, 1984).

LAND USE PLANS AND CONTROLS

This alternative, which allows multiple uses, would generally be consistent with other applicable plans. The *Wayne County Master Plan* favors multiple use for all open spaces, and the *Garfield County Master Plan* recommends multiple use for the area of the WSA. The NPS has designated their lands as being in a Recreation

and Resource Utilization Zone in the adjacent Glen Canyon NRA. However, full scale tar sand development would conflict with the preservation of scenic, scientific, and cultural values contributing to public enjoyment of NPS lands in the vicinity of the WSA and would not be in conformance with NPS plans (USDI, NPS and BLM, 1984). This alternative is based on implementation of the BLM Henry Mountain Planning Area MFP. It would generally be in conformance with the MFP, which has also been reviewed by the Governor of Utah and has been found to be consistent with plans of the State of Utah. Tar sand development would require special stipulations on development which would conflict with BLM's present oil and gas lease Category 1 designation for the area.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If tar sand, uranium, and copper were developed in the WSA it would lead to a significant increase in population, employment, and income for Emery and Wayne Counties. Tar sand development would create extensive changes in socioeconomic conditions affecting all economic sectors and the infrastructures of Hanksville and Green River, Utah. For more information on the socioeconomic impacts of tar sand development the reader is referred to the *Tar Sand Triangle Draft EIS* (USDI, NPS and BLM, 1984). However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

Without tar sand development there would be no livestock-related economic losses because the existing potential grazing use (657 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. If tar sand is developed, livestock forage and related sales and ranchers' return to labor and investment could be reduced for about 5 years but could increase as disturbed areas are reclaimed.

As discussed in the Recreation section, without tar sand development recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is estimated to increase only 10 visitor days per year

over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would likely not be significant to the local economy. With tar sand development primitive recreation in the WSA and related local income could be eliminated. Because existing visitation is only about 20 visitor days per year this loss would not be significant to the local economy. Potential increases in non-primitive recreation could lead to increases in recreation-related income.

Federal and State revenues would not be reduced by this alternative. In addition to the 20,460 acres presently leased for oil and gas (up to \$61,380 lease fees) there are 4,540 acres in the WSA open to oil and gas leases that are currently not leased. If leased they would bring up to \$13,620 additional Federal lease fee revenues per year in addition to new royalties from lease production if oil and gas were discovered. Tar sand production would bring a royalty of 12.5 percent for products removed from the lease area. Assuming a 70,000-BPD operation, royalties would be substantial. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$919.80 per year) would continue unless tar sand development disturbed sufficient acreage to require reductions in livestock forage use. There is some potential for increases in livestock forage allocation and related revenues following reclamation of disturbed lands. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (25,000 Acres)

As noted in the Description of the Alternatives section, the major changes that could occur in the 25,000-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 8 miles of existing vehicular ways in the WSA would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis, it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 20 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would

expire before production of commercial quantities and that tar sand conversion areas would be either converted with restrictive nonimpairment stipulations or denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA.

Because potentially disturbed areas would be of a much smaller magnitude than under the No Action Alternative (20 vs. 9,170 acres) and because tar sand development would contain nonimpairment stipulations, the impacts from development and surface disturbance of 20 acres under the All Wilderness Alternative would be largely insignificant.

AIR QUALITY

Air quality would benefit from the reduction of possible disturbance from 9,170 acres to 20 acres. It is unlikely that fugitive dust from exploration and development of uranium and copper within the WSA would reduce visibility in the WSA as a whole or in adjacent WSAs or NPS-managed areas. However, if tar sand development occurred in the portion of the Tar Sand Triangle STSA outside the WSA, reduction in visibility in the WSA and in adjacent NPS areas could still occur, although this impact would be reduced.

GEOLOGY

No effect on the geologic structure of the WSA would result from 20 acres of surface disturbance.

SOILS

The soil resource could benefit from the All Wilderness Alternative because of the reduced likelihood of surface-disturbing activities. It is estimated that up to 20 acres could be disturbed from mineral exploration. Assuming that all disturbance would occur in areas with a critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 20 acres would increase from an estimated 54 cubic yards/year to 108 cubic yards/year. However, soil loss would decrease as reclamation occurred. The time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual soil loss from surface disturbance in the WSA would increase an estimated 54 cubic yards/year (0.13-percent increase over present soil loss).

VEGETATION

Under this alternative, vegetation would be protected in a natural condition insofar as surface-

disturbing activities would be minimized. A possible 20 acres could be disturbed by mineral exploration, primarily uranium and copper. This would not significantly alter the composition of vegetation types in the WSA.

WATER RESOURCES

The only surface water resource is a spring that could be expected to benefit from this alternative because of the reduced likelihood of surface disturbance from tar sand activities disrupting the recharge area. Since significant sedimentation or change in TDS is expected to occur because of an estimated annual soil loss of 108 cubic yards from surface disturbance on up to 20 acres.

Development of ground water for a tar sand industry within the WSA would be foregone. Mineral exploration and development in the WSA would generally be confined at or near the surface or with widely spaced wells and would not significantly affect the quantity or quality of ground water in the WSA. The water requirement for a 70,000-BPD tar sand industry in the adjacent part of the Tar Sand Triangle STSA outside the WSA would be 11,079 acre-feet/year for 97 years. Development of ground water within the WSA to help meet water requirements for production on adjacent areas would be foregone. Water from adjacent areas would be available (11,079 acre-feet/year) for other uses after the 97-year tar sand production period.

In-situ tar sand development in areas adjacent to the WSA could, over time, lower quality of the ground water in this WSA. However, under this alternative present water quality would remain in the WSA for a longer period because the aquifer would not be injected directly. Lower-quality water could migrate into the area from distant injection activities (USDI, NPS and BLM, 1984). The time required for ground water contamination through migration cannot be determined with available information.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 20,460 acres (19,540 acres pre-FLPMA and 920 acres post-FLPMA) are under oil and gas leases. However, no exploration or development of oil and gas is presently occurring within the WSA.

If the area were designated, it would be placed in a Category 4 status (no leasing) with no new leasing. However, pre and post-FLPMA leases

could be developed subject to the stipulations issued at the time of leasing. If oil and gas leases are converted to combined hydrocarbon leases, they would be considered as post-FLPMA. If no production has occurred prior to designation, the existing leases would expire and would not be reissued.

It is concluded that exploration for and development of a recoverable resource of up to 3 million barrels of oil in-place or less than 18 billion cubic feet of natural gas could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of recoverable oil and gas resources.

Tar Sand

Approximately 20,460 acres of the WSA are part of the Tar Sand Triangle STSA and are under lease conversion application. If no production on this area has occurred prior to lease expiration, the existing leases would not be reissued. If production has occurred prior to wilderness designation, production could continue subject to non-impairment standards. However, because these stipulations are so restrictive, no development is anticipated.

It is concluded that, due to nonimpairment standards and closure to future leasing, tar sand development within the WSA would not occur. Therefore, the potential for development of 22,480 acres of the Tar Sand Triangle STSA (525 to 672 million barrels of recoverable oil) would be foregone. Considering current economic conditions, the probability of economic development appears low, even without wilderness designation.

Locatable Minerals

Approximately 1,830 acres are under mining claim within the WSA, principally for uranium. Up to 50,000 tons of copper and up to 500 tons of uranium oxide could occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. After that date, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b). It is estimated that, if minerals are located prior to wilderness designation, up to 20 acres could be disturbed due to exploration and development of locatable mineral resources, primarily uranium and copper.

The worst-case impact to mineral resources would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of copper and uranium in the WSA would be foregone. However, production of these metals is not currently occurring due to economic considerations (e.g., transportation, low potential, etc.), and it is unlikely that development would occur even without wilderness designation. Therefore, it is concluded that this alternative would not result in any significant loss of economically recoverable uranium and copper resources.

WILDLIFE

Wildlife would benefit from this alternative due to the preservation of solitude and naturalness. Because water is limited, present populations would remain about the same. Desert bighorn sheep may migrate into the area, but their numbers would remain low due to the limited availability of water. Future water developments would be prevented if not compatible with wilderness values.

However, about 20 acres of surface disturbance could occur from mineral exploration. This would disrupt some wildlife populations and result in mobile species (such as deer) leaving the disturbed area for the duration of these activities. Less mobile species (such as the side-blotched lizard) would either perish or coexist with the disturbances at smaller and less viable population levels. Less than 1 percent of substantial value yearlong desert bighorn sheep habitat within the WSA would be disturbed. Therefore, this disturbance would not adversely affect the distribution and abundance of bighorn sheep. The peregrine falcon (the only endangered species that may occasionally inhabit the area) and sensitive species (such as Bell's vireo and golden eagle) would avoid the disturbed area. However, overall, these species would not be adversely affected.

FOREST RESOURCES

Surface disturbance would be reduced from 9,170 acres under the No Action Alternative to 20 acres under the All Wilderness Alternative. Therefore, the scattered pinyon and juniper trees in the WSA would be protected.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 439 AUMs currently allocated in the WSA are controlled by one livestock

permittee. Additional roads and other facilities for livestock handling could be prevented in the future if not compatible with wilderness values. Because none are presently proposed and very little use of motorized vehicles is currently taking place to manage livestock, little effect on the future management of livestock grazing is expected. The grazing system presently proposed does not include any additional surface disturbance and could be implemented without impairment or loss of wilderness values. Designation of the WSA as wilderness would prevent any short-term loss of forage due to mineral and energy exploration and development.

VISUAL RESOURCES

Wilderness designation would ensure the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change) and closure of the entire area to ORV use and future mineral leasing and location.

Under this alternative, phasing out oil and gas and combined hydrocarbon leases would reduce possible mineral-related surface disturbance to that associated with development of valid mining claims. Potential disturbance would be reduced from 9,170 acres to 20 acres. Although mitigative measures would be applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. Because the potential for development of mining claims is low and only 20 acres would be disturbed visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

Approximately 20 acres could be disturbed by mineral exploration and development in the WSA; however, inventories for cultural resources conducted prior to these activities would identify those sites involved and mitigate adverse impacts. Inadvertent loss or damage to cultural resources could occur, but the potential loss would be much less under this alternative than under the No Action Alternative due to the reduction in potential acreage disturbed. The protection afforded by wilderness management would outweigh any

potential vandalism problems due to increased recreational use, and the overall effect would be positive.

RECREATION

This alternative could benefit primitive recreation by reducing the likelihood of surface-disturbing activities within the WSA, thereby protecting primitive recreation values and increasing management recognition of these values. Tar sand development in the Tar Sand Triangle STSA outside but adjacent to the French Spring-Happy Canyon WSA would degrade primitive recreational values in the WSA through sounds, airborne emissions, and reductions in visual range. The overall effect on visitation is unknown.

If tar sand development in the Tar Sand Triangle STSA outside the WSA occurs, the improved access (paved roads) into the area could increase visitation to the nearby NPS Hans Flats Ranger Station by up to 950 percent. The road to Hans Flats Ranger Station forms part of the northern boundary of the WSA. If a similar use increase occurred within the WSA during the high-use season (March-June), this increase would amount to an additional 1.1 visitors per day or 200 visitor days per year (USDI, NPS and BLM, 1984). In addition, as discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Existing recreational use is estimated at only 20 visitor days annually. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. If recreation use increases, commercial operations based on primitive recreational activities could apply for use of the WSA.

The 8 miles of vehicular ways in the WSA would be closed to ORV use. Because they are presently not used by ORVs no loss in ORV recreation would result.

WILDERNESS VALUES

Designation and management of the entire 25,000 acres as wilderness would contribute to the preservation of the wilderness values of size, naturalness, outstanding opportunities for solitude and

primitive and unconfined recreation, and the special feature. Although recreational use could increase substantially (refer to Recreation section), use relative to the size of the area would be low. Therefore, no significant impact on solitude (outstanding on 11,000 acres) and primitive recreation values (outstanding on 11,000 acres) would be expected. Naturalness could be impaired in localized areas affected by the anticipated 20 acres of surface disturbance from mineral exploration and development within the WSA. That disturbance would also impair opportunities for solitude and primitive recreation in localized areas; however, no significant impact in the area as a whole would be expected. Tar sand development in the Tar Sand Triangle STSA outside but adjacent to the WSA would degrade wilderness values in the WSA through sounds, airborne emissions, and reductions in visual range. The magnitude of the potential loss is unknown. Effects would continue for the life of the tar sand projects, approximately 130 to 160 years.

LAND USE PLANS AND CONTROLS

The *Wayne County Master Plan* calls for the multiple use of all open lands in the county. The *Garfield County Master Plan* also recommends the area in the WSA for multiple uses. This alternative would generally not conflict with the multiple-use concept since most existing resource uses would continue, although under more restrictive conditions. However, designation would conflict with the county plans because oil and gas and combined hydrocarbon leases would be phased out and future leasing and location of minerals would not be allowed.

The Glen Canyon NRA Management Plan has designated the adjacent land as being in the Recreation and Resource Utilization Zone. The All Wilderness Alternative would complement the recreation use concept of this plan.

The BLM Henry Mountain Planning Area MFP does not provide for wilderness. A decision by Congress to designate the WSA as wilderness would be an amendment to the MFP. Because the 640 acres of State land within the WSA would be exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided for resource uses in the WSA (refer to Table 11) as well as loss of potential increases in population, income, and Federal revenues that could occur under the No Action Alternative.

The major socioeconomic benefits and drawbacks of tar sand production from the WSA (i.e., increased personal income and demands placed on community infrastructure) would not occur. However, tar sand production from the portion of the Tar Sand Triangle STSA outside the WSA could occur and could result in major socioeconomic impacts in Wayne and Emery Counties (USDI, NPS and BLM, 1984). Because about 14 percent of the Tar Sand Triangle STSA is within the WSA, the duration and size of potential tar sand projects in the region would be significantly reduced to the point that some projects could become infeasible.

Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$13,140 of livestock sales and \$3,285 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increase in ranchers' income. No such potential range improvements have been proposed.

Increased public awareness of the area resulting from designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would be insignificant to both the local economy and individual businesses.

The loss of 20,460 acres now leased would cause an eventual loss of up to \$61,380 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$13,620 annually in Federal revenues from the 4,540 acres that could be

leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

Federal grazing fees would continue as at present with a possible collection of \$919.80 per year.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. Presently no commercial outfitters use the WSA on a regular basis.

Partial Wilderness Alternative (11,110 Acres)

(Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion management would be as described for the No Action Alternative. The specific actions that would take place within the 11,110-acre area designated as wilderness and the 13,890-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that in the designated area some of the existing mining claims would eventually be explored and developed, causing an estimated 9 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities and that tar sand conversion areas would be either converted with the stipulation of no surface occupancy or would be denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed.

It is assumed that within the nondesignated area 4,951 acres (90 acres, oil and gas; 4,850 acres, tar sand; and 11 acres, uranium and copper) would be disturbed sometime in the future due to exploration and development activities. Overall, 4,960 acres of surface disturbance would occur within the WSA; 4,210 acres less than under the No Action Alternative and 4,940 acres more than with the All Wilderness Alternative. Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.

AIR QUALITY

Air quality would benefit from the reduction of mineral and energy related disturbance from a possible 9,170 acres to 4,960 acres. Still, disturbance of 4,960 acres within the WSA as well as

disturbance for tar sand development outside the designated portion of the WSA could reduce visibility in the WSA although the magnitude would be reduced as compared to the No Action Alternative.

The WSA would continue to be managed by the State of Utah as a PSD Class II area. If tar sand is developed in the Tar Sand Triangle STSA, air quality could be reduced up to the PSD Class II limitations; however, the proximity of the WSA to Canyonlands National Park may result in restriction of tar sand development to meet PSD Class I limitations. Disturbance of 4,960 acres could result in major increases in fugitive dust emissions with a potential loss of visual range in the vicinity of Canyonlands National Park.

GEOLOGY

No impacts to geology are expected under this alternative from excavation of locatable minerals (i.e., uranium and copper) on up to 20 acres. Also, slight surface disturbance on up to 90 acres from oil and gas exploration and development activities would not significantly affect geology. Development of tar sand on 12,130 acres of the Tar Sand Triangle STSA by in-situ methods could result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rockfall on ledges in the WSA (USDI, NPS and BLM, 1984).

SOILS

The portion that would be designated wilderness could benefit because of the reduced likelihood of surface-disturbing activities. Assuming that 9 acres of soil would be disturbed by mineral exploration in the area that would be designated as wilderness, no significant impacts to soil would be expected. Up to 4,951 acres could be disturbed by mineral and energy exploration and development in the area that would not be designated wilderness. Assuming that all disturbance would occur in areas with critical erosion condition (worst-case analysis) and that erosion condition would increase one class, soil loss on the 4,951 acres would increase from 13,368 cubic yards/year to 26,736 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual increase in soil loss in the WSA would increase an estimated 13,368 cubic yards/year (33 percent). This is 9,490 cubic yards per year less than with the No Action Alternative.

VEGETATION

Under this alternative, vegetation would be protected on the 11,110 acres that would be designated wilderness, except for 9 acres that could be disturbed from mineral exploration and development on 1,160 acres of existing mining claims.

In the area that would not be designated wilderness, 4,951 acres could be disturbed from mineral and energy exploration and development activities. If full development should occur, portions of the WSA's sparse vegetation could be disturbed or denuded on about 20 percent of the total acreage. Portions of the existing vegetation and PNV types could be permanently modified through scarring of the landscape by access roads, tailing dumps, mill sites, etc. However, management would be provided through the Henry Mountain Planning Area MFP, that would not allow disturbance of this magnitude to occur to the sparse vegetation within the WSA without mitigative measures.

WATER RESOURCES

The only water resource is a spring located in the portion that would be designated wilderness that could benefit because of the reduced likelihood for surface disturbance, as described in the All Wilderness Alternative. However, extensive tar sand development in the area that would not be designated wilderness could disrupt some of the recharge area of the spring. Increased erosion of up to 13,368 cubic yards/year could increase sedimentation in the ephemeral drainages. The amount of increase would depend on such variables as where the disturbance occurred, the intensity of windstorms, rainfall during vulnerable periods, and the effectiveness of erosion control measures and reclamation. Since precipitation is low and all streams within the WSA are ephemeral, no significant change in TDS is expected to occur.

Development of ground water for a tar sand industry could occur in the portion that would not be designated wilderness. Mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

The water requirement for a 70,000-BPD tar sand industry in the Tar Sand Triangle STSA would be 11,079 acre feet/year for 130 years (USDI, BLM, 1984c). That portion of the Tar Sand Triangle

STSA in the area that would be designated covers 10,350 acres (approximately 6 percent of the STSA). Under this partial designation alternative, this area would not be developed. Therefore, 11,079-acre feet/year of water for a 70,000-BPD operation would be required for only 122 years as opposed to 130 years under the No Action Alternative. Development of ground water within the area that would be designated to help meet water requirements for production on adjacent areas would be foregone. Water from the nondesignated portion would be available (11,079 acre feet/year) for other uses after the 122-year tar sand production period.

In-situ tar sand development in the area that would not be designated and in areas adjacent to the WSA could lower quality of the ground water in the WSA. However, under this alternative, water quality would remain better in the area that would be designated for a longer period because the aquifer would not be injected directly. Lower quality water would have to migrate from distant injection activities (USDI, NPS and BLM, 1984). The time for ground water contamination through migration cannot be determined with available information.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status (no leasing) with no new leasing. There are approximately 9,500 acres of oil and gas leases in the area that would be designated wilderness; 8,700 acres are pre-FLPMA and 800 acres are post-FLPMA. If converted to combined hydrocarbon leases, they would be considered post-FLPMA. Activities on these leases could occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource (less than 10 million barrels of oil in-place or less than 60 billion cubic feet of natural gas) occurs within the area that would be designated wilderness under this alternative. Therefore, it is assumed that the amount of resource lost would be in direct proportion to the size of the area designated. Using this assumption, the exploration and development of a potential resource of less than 4 million barrels of oil in-place (1.2 million recoverable) or 26 billion cubic feet of natural gas (7.8 billion recoverable) could be foregone.

The present leasing Category 1 would not change in the area that would not be designated wilderness. There are 10,960 acres of oil and gas leases in this area: 10,840 acres of these leases are pre-FLPMA and 120 acres are post-FLPMA. Under this alternative, it is assumed that exploration and development for a potential resource of up to 6 million barrels of oil in-place or 34 billion cubic feet of natural gas in the area would not be foregone in the area that would not be designated. It is estimated that up to 90 acres of surface disturbance could occur from exploration and development activities on this portion of the WSA.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative would not result in a significant loss of recoverable oil and gas resources.

Tar Sand

Approximately 10,350 acres (6 percent) of the Tar Sand Triangle STSA lie within the portion of the WSA that would be designated; approximately 9,500 acres are presently under lease conversion application in this area. If production on the leases has not occurred prior to designation, the existing leases would be allowed to expire and new leases would not be issued. If production has occurred prior to designation, production could continue subject to nonimpairment standards. However, because these stipulations are so restrictive, no development is anticipated.

It is concluded that, due to nonimpairment and Category 4 stipulations, tar sand development within the portion of the WSA that would be designated wilderness would not occur. Assuming that the resource is evenly distributed throughout the Tar Sand Triangle STSA, the potential for recovery of 225 to 288 million barrels of oil would be foregone.

The present leasing Category 1 would not change in the area that would not be designated wilderness. There are 10,960 acres of tar sand under lease conversion application. Under this alternative, it is estimated that 300 to 384 million barrels of recoverable oil would have potential for exploration and development in the area that would not be designated. It is estimated that up to 4,850 acres of surface disturbance could occur from exploration and development activities on this portion of the WSA from tar sand development.

The area would again be open to mineral leasing and development. However, it is concluded that, even though the potential tar sand deposits are large and there is a high certainty that these exist, the probability of economic development of minerals under this alternative is low.

Locatable Minerals

Approximately 1,160 acres of mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. After that date, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b). It is estimated that, if minerals are located prior to wilderness designation, up to 9 acres could be disturbed due to exploration of mineral resources, primarily uranium, in the area that would be designated as wilderness.

It cannot be determined how much of the existing potential resource (50,000 tons of copper and 500 tons of uranium oxide) is within the area that would be designated wilderness under this alternative. The worst-case impact to mineral resources would occur if the potentially recoverable minerals are not within mining claims filed by the date of wilderness designation. If it is assumed that the amount of potentially recoverable resources is in direct proportion to the size of the area designated, the potential for exploration and development of up to 22,000 tons of copper and 220 tons of uranium oxide could be foregone in the area that would be designated wilderness.

Approximately 670 acres of mining claims fall within the area that would not be designated wilderness. Development work, extraction, and patenting could continue to occur on these claims. It is estimated that up to 11 acres could be disturbed due to exploration, primarily for uranium, on the area that would not be designated as wilderness. Under this alternative, it is assumed that exploration and development of a potential resource of up to 28,000 tons of copper and 280 tons of uranium oxide could occur on this portion of the WSA.

Because production of these metals is not currently occurring within the WSA and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration would occur. Therefore, it is concluded that this alternative would not result in any significant loss of economically recoverable minerals.

WILDLIFE

Wildlife could benefit from this alternative due to the preservation of solitude and naturalness on 11,110 acres that would be designated wilderness. Because water is limited, present populations would remain the same. Desert bighorn sheep may migrate into the area, but their numbers would remain low due to the limited availability of water. Future water developments on the designated area would be prevented if not compatible with wilderness values.

About 9 acres of surface disturbances could occur from mineral exploration on the area that would be designated. This could disrupt some wildlife populations and result in mobile species (such as deer) leaving the disturbed area for the duration of these activities. Less mobile species (such as the side-blotched lizard) would either perish or coexist with the disturbances at smaller and less viable population levels. Less than 1 percent of substantial value yearlong desert bighorn sheep habitat within this portion of the WSA would be disturbed. Therefore, this would not adversely affect the distribution and abundance of bighorn sheep. Peregrine falcon, the only endangered species that may occasionally inhabit the area, and sensitive species, such as Bell's vireo and golden eagle, would also avoid the disturbed area. However, overall, none of these species would be adversely affected because the disturbed area would be small.

In the area that would not be designated, 4,951 acres of surface disturbance could occur from mineral and energy exploration and development. This would also disrupt wildlife. Wildlife species would be dispersed from the disturbed area for the duration of these activities. About 46 percent of the substantial value yearlong desert bighorn sheep range in the WSA would be disturbed; therefore, desert bighorn sheep would avoid the disturbed area and would not become established. Some mobile wildlife would either perish or coexist at smaller and less viable population levels. Peregrine falcon and some sensitive species, such as Bell's vireo and golden eagle, would avoid the disturbed area. However, overall, none of these species would be adversely affected. Others, such as the dwarf shrew, would probably perish. Following mineral development and production, wildlife could benefit from development of water sources (none are currently planned) that could be completed without consideration of wilderness values.

FOREST RESOURCES

Disturbance of 4,960 acres in the WSA for mineral and energy exploration and development could destroy scattered patches of pinyon and juniper. This would not be a significant loss of forest products due to the limited nature of the resource in the WSA.

LIVESTOCK

In the area that would be designated wilderness there would be no livestock grazing because the area includes only a portion of the Flint Trail Allotment, which is not used (unallocated) at the present time due to terrain limitations and low carrying capacity (USDI, BLM, 1983b).

In the area that would not be designated, grazing use (439 AUMs) would continue as authorized in the current MFP for the Henry Mountain Planning Area. Surface disturbance of approximately 4,951 acres due to mineral and energy exploration and development could reduce available forage for cattle. If development of this magnitude occurred, less than 2 percent of livestock forage on the Robbers Roost Allotment would be disturbed and/or destroyed, thus reducing the available AUMs. However, following reclamation, additional forage could be available to livestock.

VISUAL RESOURCES

In the 11,110-acre portion that would be designated wilderness, the exceptional canyon scenery would be protected and preserved because the VRM class would change from Class II to Class I. Nine acres of surface disturbance from mineral exploration could result in a small amount of localized degradation of visual values, but no significant impact in this portion of the WSA as a whole would be expected.

In the 13,890-acre portion that would not be designated, 11,520 acres would continue to be managed under VRM Class IV standards and 2,370 acres as Class II. Anticipated surface disturbances (8,101 acres) from tar sand development in this portion would not meet Class II objectives on the disturbed areas. Even after rehabilitation, some permanent localized degradation would be expected. In VRM Class IV areas, disturbances would create long-term contrasts but, with rehabilitation, VRM objectives could be met.

CULTURAL RESOURCES

Nine acres could be disturbed by mineral exploration and development in the area that would be designated wilderness; however, inventories for

cultural resources conducted prior to these activities would identify those sites involved and mitigate any adverse impact to them. Inadvertent loss or damage to cultural resources could occur; however, it is expected to be minimal. The protection afforded by wilderness management would outweigh any potential vandalism problems, and the overall impact would be positive.

Likewise, in the nondesignated portion of the WSA, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance. Vandalism would continue to be a problem and would increase in proportion to the general population increase. In the nondesignated portion vandalism would increase if roads are constructed for mineral and energy exploration and development.

RECREATION

Impacts on recreation values and opportunities for the 11,110-acre area that would be designated would be as described in the All Wilderness Alternative. Outstanding primitive recreational activities would be recognized, managed, and preserved. Recreational use could increase by about 200 visitor days per year due to improved access to the Tar Sand Triangle STSA; however, during the high-use season (March-June) user density would still be low (about 1.1 visitors per day). Mineral-related surface disturbance on up to 9 acres in the area that would be designated could cause a small amount of localized impairment of recreation values.

In the area that would not be designated (13,890 acres), little change in recreational use is expected due to the limited recreational values present in that portion. Mineral and energy and exploration activities on up to 4,960 acres in that portion would degrade recreational values in the affected areas. ORV use would be allowed on the 8 miles of vehicular ways in the nondesignated portion of the WSA.

WILDERNESS VALUES

Impacts in the 11,110-acre portion that would be designated wilderness would be the same as under the All Wilderness Alternative: size, naturalness, outstanding opportunities for solitude and primitive recreation, and the special feature would be preserved. Although recreational use could increase substantially (refer to the Recreation section above), use relative to the size of this area would be low. Therefore, no significant impacts on solitude or primitive recreation values

would be expected. There could be a slight loss of wilderness values due to allowable surface disturbance from mineral exploration on 9 acres. Additionally, sights, sounds, and emissions of activities in the 13,890-acre area that would not be designated could result in loss of solitude and primitive recreation values.

In the 13,890-acre area that would not be designated, there could be up to 4,951 acres of surface disturbance from mineral and energy exploration and development. These activities would eliminate naturalness and opportunities for solitude and primitive recreation (rated as less than outstanding in this portion of the WSA). Additionally, sights, sounds, and emissions of mineral and energy activities could impair solitude and primitive recreation values in the designated portion of the WSA as well as in Dirty Devil, Horseshoe Canyon (South), and Fiddler Butte WSAs and in the NPS-proposed wilderness in the Glen Canyon NRA, and possibly in Canyonlands National Park.

LAND USE PLANS AND CONTROLS

This alternative would generally be consistent with multiple use because it would allow most resource uses of public lands although under more restrictive conditions. However, this alternative would conflict with the multiple-use concept of Wayne and Garfield Counties because oil and gas and combined hydrocarbon leases would expire and would not be renewed, and future leasing and location of minerals would not be allowed on 44 percent of the WSA that would be designated as wilderness. A Partial Wilderness Alternative would favor the resource utilization concept in the Glen Canyon NRA planning system, but would not complement their recreation planning concept.

The BLM Henry Mountain MFP does not provide for wilderness. A decision by Congress to designate 11,110 acres of the WSA as wilderness would be an amendment to the MFP. No State lands or private in-holdings are within the area that would be designated as wilderness.

SOCIOECONOMICS

Overall, with partial designation there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource

uses in the WSA (refer to Table 11) as well as loss of potential increases in population, income, and Federal revenues that could occur under the No Action Alternative.

The socioeconomic benefits and drawbacks of tar sand production from the 10,350 acres of the Tar Sand Triangle STSA within the designated portion of the WSA that could occur under the No Action Alternative would not occur under partial designation. However, tar sand production from the 12,130 acres of the Tar Sand Triangle STSA area in the nondesignated portion as well as the remainder of the Tar Sand Triangle STSA could occur and could result in major socioeconomic impacts in Wayne and Emery Counties. The size and duration of tar sand projects in the region would be reduced. Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Without tar sand development livestock use and ranchers' income would continue as at present with potential for 657 AUMs of use, \$13,140 of livestock sales, and \$3,285 of ranchers' return to labor and investment. If tar sand is developed in the nondesignated portion of the WSA, livestock forage and related sales and returns could be reduced for up to 5 years, but there is a potential for increased grazing and related sales and returns following reclamation of disturbed areas.

Increased public awareness of the area resulting from designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would be insignificant to both the local economy and individual businesses.

The loss of 9,500 acres now leased would cause an eventual loss of up to \$28,500 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$4,830 annually in Federal revenues from the 1,610 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

Without tar sand development, Federal grazing fees of \$919.80 per year would continue. With tar sand development on the nondesignated portion livestock forage use and related Federal grazing fees could initially be reduced but could be restored over time.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increase. Presently no commercial outfitters use the WSA on a regular basis.

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Fiddler Butte WSA



FIDDLER BUTTE WSA

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FIDDLER BUTTE WSA

(UT-050-241)

INTRODUCTION

General Description of the Area

Fiddler Butte Wilderness Study Area (WSA) consists of 73,100 acres of public land in north-eastern Garfield County. It is about 25 miles southeast of Hanksville and immediately north of Hite and Glen Canyon National Recreation Area (NRA). The Fiddler Butte WSA is managed by the BLM Richfield District Henry Mountain Resource Area office. A portion of the WSA is adjacent to the National Park Service (NPS) proposed wilderness within the Glen Canyon NRA.

The west portion of the WSA contains eight parallel slickrock canyons which are all side drainages of North Wash. These canyons are widest and deepest along North Wash/U-95 and become narrower as they approach 1,000-foot rock cliffs near the Dirty Devil River. The WSA includes the geographic features of Fiddler Butte, The Block (North and South), and South Hatch Canyon. The predominant vegetation in the WSA is blackbrush and other desert shrubs with scattered pinyon and juniper.

There are eight State Sections in-held and four other State sections that form portions of the boundary.

Because of low relative humidity, diurnal temperature ranges are large (usually 30 to 35 degrees Fahrenheit [F]). Average annual temperatures are about 55 degrees F along the Dirty Devil River. Average summer temperatures are about 82 degrees F. Precipitation is usually less than 10 inches annually.

Specific Issues Identified in Scoping

General issues pertaining to more than the Fiddler Butte WSA are discussed in Volume I.

During scoping for the Environmental Impact Statement (EIS), BLM presented a preliminary indication of areas considered suitable or unsuitable for wilderness designation. Several comments were made on BLM's preliminary recommendations and rationale for those recommendations. For each WSA, the preliminary recommendation was based on site-specific analysis drafted in one of the five Utah BLM districts. The indication of suitability was made public prior to the EIS to obtain further input which has assisted in the formulation of the EIS alternatives. Additional input is expected as a result of the public

review and comment on the Draft EIS. At the conclusion of the EIS process, BLM will review and consider all of the information received and at that time will formulate a final recommendation of areas found suitable for wilderness designation. Rationale for such recommendations will be included in a Wilderness Study Report to be submitted to the Secretary of the Interior and, subsequently, to Congress. The rationale will be keyed to the criteria of the "Wilderness Study Policy" (USDI, BLM, 1982a) and to other resource management factors generally as described in Chapter 2, Volume I of this EIS.

Comments received during scoping (USDI, BLM, 1984d) that pertain specifically to the Fiddler Butte WSA are responded to below:

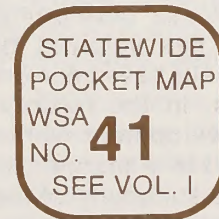
1. *Comment:* The Bailey-Kuchler Potential Natural Vegetation (PNV) map should not be used to describe vegetation diversity for this WSA.

Response: BLM's "Wilderness Study Policy" requires that the Bailey-Kuchler map be used to indicate the PNV types in each WSA. This has been done for this WSA and is discussed in the Vegetation sections of this document. The existing vegetation types of the WSA are also described.

2. *Comment:* Is Soil-Vegetation Inventory Method (SVIM) data available for this area? SVIM could be used to describe vegetation types not accounted for by Bailey-Kuchler's Map.

Response: SVIM data were used to describe existing vegetation types for this WSA, as discussed in the Vegetation sections of this document.

3. *Comment:* The occurrence of the sensitive plant species *Astragalus monumentalis* in or near this WSA should be considered in the decisionmaking process.



Response: The effects of wilderness designation or nondesignation on the sensitive species *Astragalus monumental* and *Astragalus rafa* are discussed in the Vegetation sections of this document.

4. *Comment:* Tar sand potential for development should be "submarginal" not "paramarginal" in view of cost estimates. Development is unlikely. Would it be economical?

Response: Approximately 56 percent of the WSA (41,250 acres) overlays a portion of the Tar Sand Triangle Special Tar Sand Area (STSA). The effects of wilderness designation or nondesignation on tar sand recovery are discussed in the Mineral and Energy Resources sections of this document. The area has a high resource potential for tar sand but low probability of development due to economic restraints.

5. *Comment:* Why were the Red Benches along the Glen Canyon NRA excluded from the recommendation?

Response: The Red Benches are within the WSA. They were not included in the preliminary wilderness suitability recommendation (Alternative 3) because the area has less than outstanding opportunities for primitive recreation and solitude. Wilderness values are discussed in the Affected Environment and Environmental Consequences sections of this document.

6. *Comment:* The road to the mining claim southwest of The Block is drawn incorrectly on the map in the Site-Specific Analysis (SSA).

Response: BLM believes the road to be accurately drawn; however, regardless of its location, it would be "cherry-stemmed" and vehicular use allowed if the WSA is designated wilderness.

7. *Comment:* The BLM has allowed drilling operations which violate the Federal Land Policy and Management Act (FLPMA).

Response: Past lease development activity within the WSA has involved geophysical exploration. No wells have been drilled within WSA boundaries. In the future, any post-FLPMA lease development within the WSA will be completed in a manner that will not impair wilderness suitability of the WSA. No acreage will be eliminated from wilderness suitability based on post-FLPMA lease development.

8. *Comment:* The area has moderate to high hydrocarbon (oil and gas) potential plus potential for carbon dioxide; therefore, it should not be designated as wilderness.

Response: As discussed in the Mineral and Energy Resources section under Affected Environment, tar sand is the only leasable mineral known to exist in the WSA. Based on geologic factors, oil, gas, and carbon dioxide may occur. The potential for oil and gas was given a rating of f2 (low) on a scale of 1 to 4, where 4 is equated with high mineral potential by Science Applications, Inc. (SAI, 1982). The mineral analysis in this document discusses the impacts that wilderness designation and nondesignation would have on recovery of the mineral resource within the Fiddler Butte WSA. The decision for or against wilderness designation will be made by Congress.

9. *Comment:* The oil and gas potential of the WSA is ranked low by SAI (1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be high. This information should be considered in the Draft EIS.

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

10. *Comment:* What is the effect of wilderness designation on oil, gas, and tar sand development?

Response: Wilderness designation would not affect the termination of existing leases. Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue after designation. Undeveloped existing leases would terminate on their expiration dates. However, as discussed in the Mineral and Energy Resources sections of this document, wilderness designation would prevent future leasing, and the opportunity to recover oil and gas resources not discovered prior to expiration of existing leases would be foregone. Combined hydrocarbon leases would either be denied or issued with a no surface occupancy stipulation effective until a Congressional decision

on designation or nondesignation of the WSA is made. Therefore, if the WSA is designated, it is assumed that tar sand development would be prevented.

11. *Comment:* Wilderness designation would protect the Dirty Devil River, which is a Nationwide Rivers Inventory segment with potential for study and addition to the National Wild and Scenic Rivers System.

Response: As discussed in the Recreation sections of this document, wilderness designation would protect approximately 4 miles of the river that are within the WSA. The river would also be protected under present BLM guidance and management. The BLM must, as part of its environmental review process, avoid or mitigate adverse impacts to the river and consult with the NPS before taking any action that would foreclose wild, scenic, or recreational river status.

12. *Comment:* The Block should not be recommended suitable because it is in the Tar Sand Triangle STSA, and intrusions and sounds associated with development would degrade wilderness values. Also, The Block may not contain the minimum 5,000 suitable acres.

Response: As discussed in the Wilderness Values sections of this analysis, the degree to which sights and sounds from tar sand development would degrade wilderness values in The Block would be contingent upon how much surrounding acreage is designated wilderness. If the entire WSA is designated wilderness (Alternative 2), tar sand development would be precluded in the WSA, and sights and sounds from tar sand development outside the WSA would be less a factor in The Block. If lands surrounding The Block are not designated (Alternative 3), tar sand development adjacent to The Block would be disruptive. The Block itself, as defined under Alternative 3, contains approximately 5,700 acres of public land and could stand alone as a wilderness area.

13. *Comment:* Interim management mining intrusions occurred without a mining plan or Environment Assessment (EA). What part of the WSA is now found unsuitable for designation?

Response: The preliminary wilderness suitability recommendation (32,700 acres suitable) largely was based on omission of areas lacking outstanding opportunities for solitude and primitive recreation. This preliminary

recommendation is only one of four alternatives studied for consideration in this EIS, and BLM's final recommendation may or may not be the same. No WSA acreage was excluded from suitability under this alternative due to post-FLPMA-related disturbances.

14. *Comment:* The BLM ignored wilderness values in that portion of the remanded area that was not recommended suitable.

Response: On April 12, 1985, the Interior Board of Land Appeals (IBLA) instructed BLM to include an additional 8,100 acres to the Fiddler Butte WSA for study (IBLA case 84-182). This has been done increasing the size of the Fiddler Butte WSA to 73,100 acres.

15. *Comment:* The portion recommended as suitable in Hatch Canyon in the Draft SSA might not offer solitude if tar sand development occurred.

Response: As discussed in the Wilderness Values sections of this document, tar sand development that could occur within the WSA under Alternatives 3 and 4 would be more disruptive to wilderness values of the WSA than would sights and sounds of tar sand development outside the WSA if the entire WSA were designated wilderness (Alternative 2).

16. *Comment:* Would wilderness designation be consistent with local and State land use planning?

Response: The conflicts of wilderness designation are discussed in the Land Use Plans and Controls section of this document. The Fiddler Butte WSA is in Garfield County and the County Master Plan recommends that the lands in the WSA be open to multiple use. Designation of the WSA as wilderness would conflict with the County's concept of multiple use. After wilderness designation, the in-held State lands could be exchanged to avoid conflicts with State plans.

17. *Comment:* Only 5,000 acres of the 40,000-acre remanded area were recommended as suitable in the revised SSA. Could not the BLM have made the same mistake as in the original SSA when 24,200 acres, now classified as suitable, were initially rejected?

Response: The preliminary wilderness suitability recommendation (Alternative 3) is the area having highest wilderness values. Some of the area delineated in this alternative is also within the Tar Sand Triangle STSA, although much of the tar sand conflict area was not included in the recommendation area. At this

time the preliminary suitability recommendation is being considered simply as an alternative for this analysis. It may or may not be BLM's eventual recommendation for wilderness.

18. *Comment:* The Draft SSA indicated that the WSA has many canyons for topographic screening, yet opportunities for solitude were listed as moderate. Why? What is high, medium, or low?

Response: The WSA's wilderness characteristics are discussed in the Wilderness Values, Affected Environment section of this document. Opportunities for solitude were found to be outstanding on 26,000 acres in the canyons of North Wash and the Dirty Devil River due to their number, variety, size, and configuration. Opportunities were judged less than outstanding in the eastern portion of the WSA (47,500 acres) due to the area's low rolling hills, sparse and low-growing vegetation and mining activity in The Cove and Fiddler Butte areas. The terms high, medium, and low are not used in this document.

19. *Comment:* The Draft SSA recommended only a small area suitable. Why? The remainder of the WSA possesses mandatory characteristics and no significant resource conflicts.

Response: The portions of the WSA not included in BLM's preliminary wilderness suitability recommendation (Alternative 3) have less than outstanding opportunities for primitive recreation and solitude.

20. *Comment:* The preliminary planning recommendation on the remanded areas is considered correct except for the areas dropped that border proposed wilderness in the Glen Canyon NRA.

Response: Refer to the response to the preceding comment.

21. *Comment:* Would wilderness designation of the WSA benefit the values and uses of the adjacent proposed Glen Canyon NRA wilderness?

Response: As discussed in the Wilderness Values sections of this document, the adjacent NPS wilderness proposal enhances wilderness values in that portion of the WSA along the Dirty Devil River, and the reverse is also true.

22. *Comment:* Would the WSA be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous NPS lands?

Response: The WSA or portions of the WSA, as described under Alternatives 2, 3, and 4, would be viable as wilderness areas independent of adjacent NPS lands.

23. *Comment:* Could the BLM portion be more effectively managed as wilderness if the management responsibility were transferred to the Glen Canyon NRA, which would administer the contiguous wilderness?

Response: The BLM portion could probably be managed as wilderness by either agency. The analysis in this document assumes BLM management.

24. *Comment:* How would wilderness designation affect development of tar sand resources in and near the WSA?

Response: The effect of wilderness designation and nondesignation on recovery of the tar sand resource within the WSA is discussed in the Mineral and Energy Resources sections of this document. The effect on tar sand recovery outside the WSA is discussed in Volume I. If the WSA were designated as wilderness, the tar sand within the WSA would not be developed.

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

During scoping, it was suggested that two new partial alternatives be analyzed, one to exclude The Block due to tar sand development potential and one to exclude Hatch Canyon due to lack of solitude if adjacent tar sand development occurred. Two partial alternatives had been previously identified by BLM; one includes The Block and one excludes that area. In both cases, most of North and South Hatch Canyons, except for a portion immediately east of the Dirty Devil River, are excluded. Since adding the suggested new alternatives would not substantially add to the information generated in the two partial alternatives already prepared, the suggested new alternatives were eliminated from detailed study.

Alternatives Analyzed

Four alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (73,100 acres); (3) Partial Wilderness (32,700 acres); and (4) Partial Wilderness (27,000 acres). A description of each

alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 73,100-acre Fiddler Butte WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The State land within the area of the WSA (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase.

The following are specific actions that would take place under this alternative:

- All 73,100 acres would remain open to mineral location, leasing with standard and special lease stipulations, and sale. Development work, extraction, and patenting would be allowed on existing mining claims (6,496 acres) and future mining claims. Leases, including potential converted combined hydrocarbon leases on about 26,240 acres, could be developed under leasing Category 1 (standard stipulations) on about 70,283 acres and under Category 2 (standard and special stipulations) on about 2,817 acres.
- The present domestic livestock grazing use of the 73,100-acre WSA would continue as authorized in the MFP (currently 1,100 Animal Unit Months [AUMs]), including the potential for new, but limited, livestock use of 13 AUMs in the currently unallotted (unused) Flint Trail Allotment. Existing range facilities (one spring development and 13 reservoirs) could be used and maintained and new range improvements (renovation of the spring and eight reservoirs and construction of one spring development) could be implemented without wilderness considerations.
- Use, maintenance, and development of improvements for wildlife, water resources, etc. could be allowed if in conformance with the MFP. None are planned. Implementation of desert bighorn sheep transplants would be allowed without wilderness consideration.
- The entire WSA acreage would be open to

vehicular use and new access routes for development would be allowed.

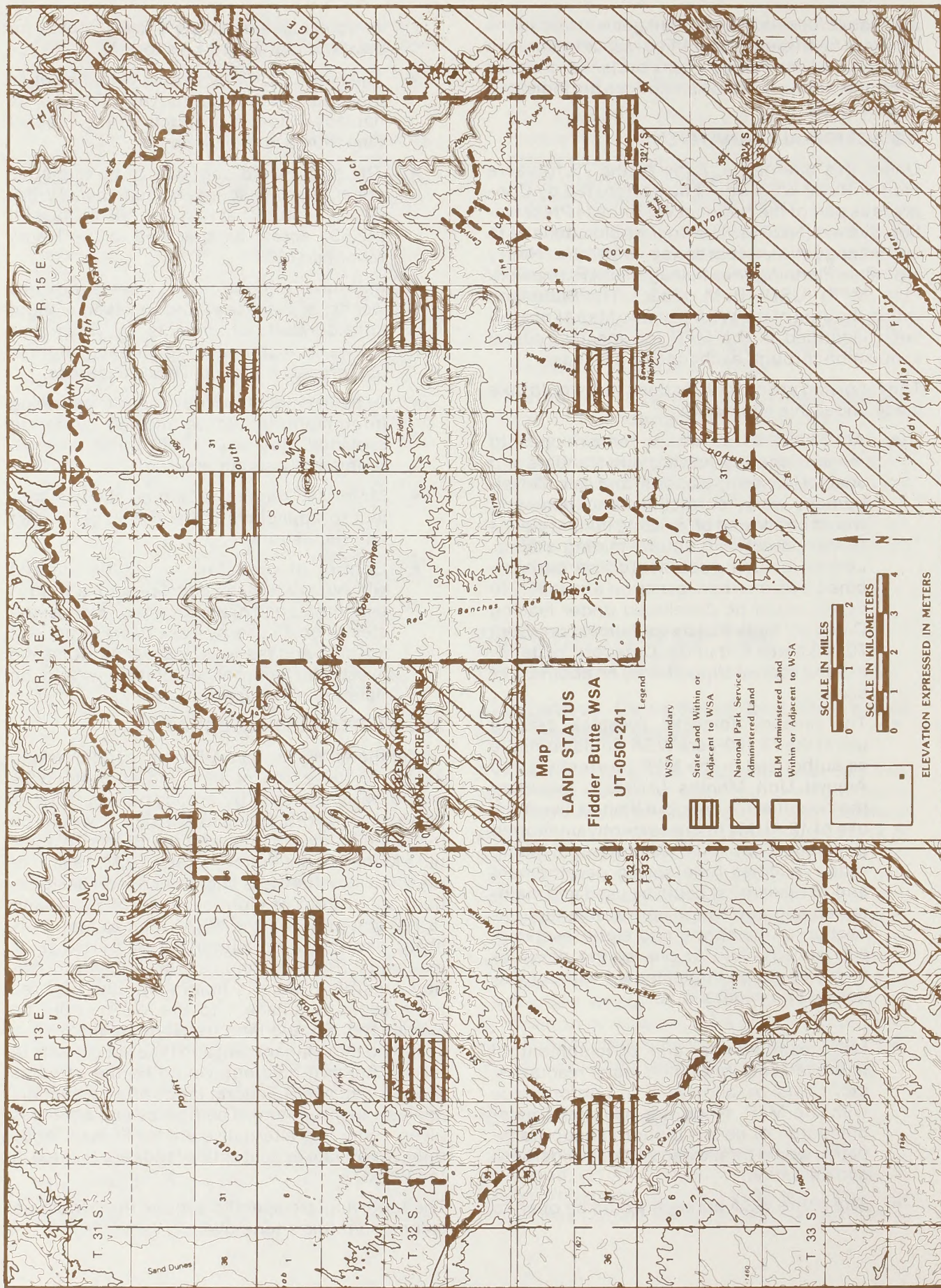
- The entire 73,100-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (30,550 acres) and VRM Class III (42,550 acres) as specified in the Henry Mountain MFP.
- Measures to control fire, insects, noxious weeds, or disease would be taken without consideration of impacts to wilderness values in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

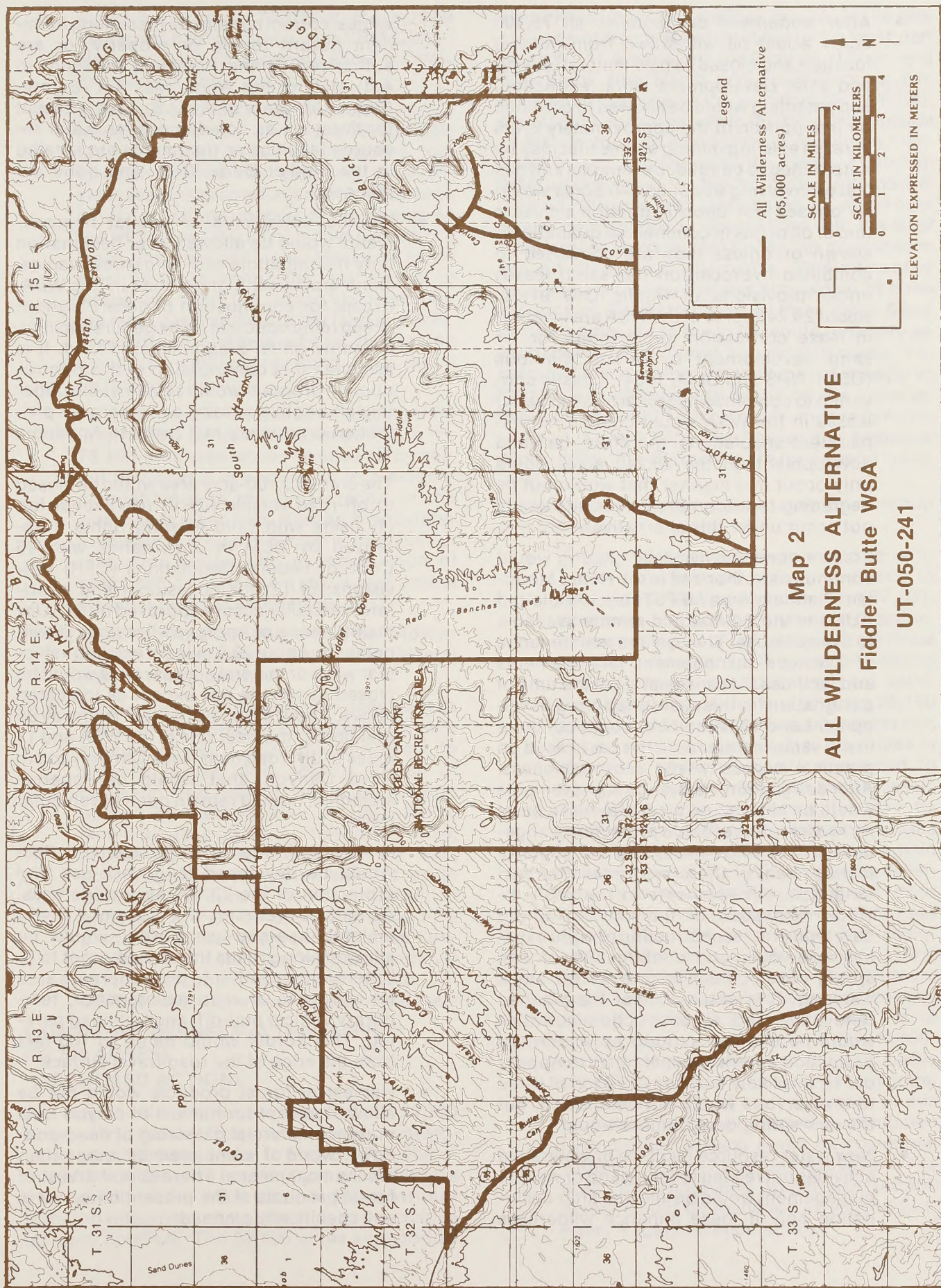
ALL WILDERNESS ALTERNATIVE

Under the All Wilderness Alternative (refer to Map 2), all 73,100 acres of the Fiddler Butte WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM's "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of eight sections of State land (5,120 acres) within the WSA (refer to Map 1) is likely, and would be authorized by purchase or exchange. (Refer to Volume I for further information regarding State in-holdings). One of three State sections adjacent to the WSA would be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

The following are specific actions that would be taken under this alternative:

FIDDLER BUTTE WSA





FIDDLER BUTTE WSA

- After wilderness designation, all 73,100 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 6,496 acres of existing mining claims that may be determined to be valid. Existing oil and gas leases involving about 65,240 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown or unless they are converted to combined hydrocarbon (tar sand) leases under provisions of Public Law 97-78. About 26,240 acres of the WSA are involved in lease conversion applications for tar sand development by in-situ methods (USDI, NPS and BLM, 1984). Leases converted to combined hydrocarbon (tar sand) leases in the WSA would contain nonimpairment stipulations; therefore, tar sand development on the 26,240 acres could only occur in a manner that would not be degrading to wilderness values and would not occur under this alternative.
- Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 1,100 allotted AUMs in the WSA would remain available to livestock use. The use and maintenance of livestock management improvements and facilities that are existing at the time of designation (in this case, one spring development and 13 reservoirs) could continue in the same manner as in the past based on practical necessity and reasonableness. After designation, new range improvements would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources. Planned rangeland developments in the WSA include renovation of the existing spring development, reconstruction of eight existing reservoirs, and construction of one spring development to provide for stock watering. It is assumed that the planned renovation and reconstruction activities would be allowed as long as wilderness protection criteria are met (refer to Appendix 1). It is likely that construction of three new reservoirs would not be allowed, but the new spring development would.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if these enhance wilderness values, correct conditions presenting imminent hazard to life or property, or are authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). Except for livestock as noted above, no water resource facilities or treatments are located in the Fiddler Butte WSA, and none are planned.
- Wildlife transplants or habitat improvements would be allowed after designation only if compatible with wilderness values. None are existing or planned in this WSA, except for continuation of desert bighorn sheep reintroduction in the general vicinity, primarily on NPS-administered land. It is assumed that continuation of this reintroduction program would be allowable under this alternative as long as wilderness protection criteria are met (refer to Appendix 1).
- The entire 73,100-acre area would be closed to off-road vehicle (ORV) use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 Code of Federal Regulations (CFR) provisions; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments. About 23.6 miles of existing vehicular ways or mineral access roads would be closed to vehicle use except as indicated above. About 8.5 miles of State Highway 95 that border the west side of the WSA and 11 miles of dirt road near Rock Canyon and in Cove Canyon, that would be "cherry-stemmed," would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 73,100-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if completed by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.

- Visual resources on 73,100 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the 73,100-acre area would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least impact to wilderness value (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources in the 73,100-acre area would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures, unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods that are directed at eliminating the offending individuals while, at the same time, presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE (32,700 ACRES)

(PROPOSED ACTION)

For this Partial Wilderness Alternative, 32,700 acres of the Fiddler Butte WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA that has the most outstanding wilderness characteristics and to reduce tar sand conflicts. The 32,700 acres analyzed as

wilderness under this alternative include the side canyons of North Wash (located in the west part of the WSA), areas along the Dirty Devil River, and The Block (the North and South Blocks; two connected plateaus in the east part of the WSA). The 40,400-acre area within the WSA, but outside of that designated as wilderness, would be managed in accordance with the Henry Mountain MFP as described for the No Action Alternative. The 32,700-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy," as described in the All Wilderness Alternative. This alternative would likely involve Federal acquisition of three sections of State land. One of three other State sections adjacent to the WSA would probably be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only.

A summary of specific actions under this alternative follows.

- The 32,700-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 32,700-acre area development work, extraction, and patenting would be allowed to continue on approximately 2,546 acres of existing mining claims, provided they are valid. Existing oil and gas leases, covering 28,190 acres, would be phased out upon expiration unless a find in commercial quantities is shown or unless they are converted to combined hydrocarbon (tar sand) leases. The 5,800 acres of leases that may be converted to combined hydrocarbon leases in the 32,700-acre wilderness would contain nonimpairment stipulations, limiting development to those activities that could occur in a manner not degrading to wilderness values. The 40,400-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of existing mining claims (3,950 acres) and future mining claims could occur in the 40,400-acre area if claims are valid. Existing leases (37,050 acres) and future leases (including the 20,440 acres of existing leases in this area that may be converted to combined hydrocarbon leases) could be developed without concern for wilderness values. The area not designated wilderness (40,400 acres) would be managed as leasing Category 1 (general stipulations).

Map 3

PARTIAL WILDERNESS ALTERNATIVE

Fiddler Butte WSA

UT-050-241

Legend

- WSA Boundary
- Partial Wilderness Alternative (32,700 acres)

SCALE IN MILES

SCALE IN KILOMETERS

ELEVATION EXPRESSED IN METERS

- Domestic livestock grazing in the 32,700-acre wilderness would continue as authorized in the MFP (currently allocated at 213 AUMs in this portion). No livestock facilities exist in the 32,700-acre wilderness and none have been proposed. In the 40,400-acre nonwilderness area, grazing use would continue as authorized in the MFP. This area contains approximately 887 AUMs and all existing and planned range developments noted under the description of the All Wilderness Alternative. Existing facilities could be used and maintained and new range facilities and improvements could be developed without concern for wilderness values.
- In the 32,700-acre wilderness new water resource facilities or watershed activities would be allowed only if enhancing to wilderness, if necessary to correct conditions that are imminently hazardous to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act*. In the remaining 40,400-acre area water resource developments would be allowed without wilderness considerations if in accordance with the MFP. None are currently planned.
- In the 32,700-acre wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. It is assumed that continuation of the desert bighorn sheep reintroduction program would be allowable under this alternative in the entire 73,100-acre WSA as long as wilderness protection criteria (refer to Appendix 1) are met in the wilderness portion.
- The 32,700-acre wilderness would be closed to vehicular use. The remainder of the unit, which includes the 23.6 miles of existing vehicular ways and mining roads, would remain open to vehicular travel. "Cherry-stemming" of 11 miles of road near Rock Canyon and Cove Canyon would not be needed.
- A specific Wilderness Management Plan would be developed that would govern use and protection of the 32,700-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trail-head parking. This border would be up to 100 feet from the edge of the road travel surface or the edge of the right-of-way for State Highway 95, whichever is greater.
- Harvest of forest products in the 32,700-acre wilderness would not be allowed except for harvest of pinyon nuts or non-commercial gathering of dead-and-down wood if accomplished by other than mechanical means. The remaining 40,400 acres would be open to woodland harvest. None is currently planned.
- Visual resources on the 32,700-acre wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 40,400 acres would be managed as VRM Class II (5,700 acres) and VRM Class III (34,700 acres), as currently set forth in the Henry Mountain MFP.
- Within the 32,700-acre wilderness, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be limited to hand and aerial techniques. In the nonwilderness portion of the unit, measures of control could be taken without wilderness considerations.
- In the entire 40,400-acre nonwilderness portion of the WSA, any activity for the purpose of gathering information about natural resources would be allowed by permit. In the 32,700-acre wilderness such activity would be allowed by permit, but would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- In the entire 32,700-acre wilderness hunting would be allowed subject to applicable State and Federal laws and regulations, but use would be limited to nonmotorized means. In the 40,400-acre area not designated, motorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- In the entire 32,700-acre wilderness, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic

livestock, but only under conditions that would ensure minimum disturbance to wilderness values. Poison baits or cyanide guns would not be allowed. In the 40,400-acre area not designated wilderness, control of predators would be allowed for the same reasons, but without wilderness considerations.

PARTIAL WILDERNESS ALTERNATIVE (27,000 ACRES)

For this Partial Wilderness Alternative, 27,000 acres of the Fiddler Butte WSA would be designated as wilderness (refer to Map 4). The objective of this alternative is to avoid conflicts with potential tar sand development and to identify and analyze the remaining portion of the WSA that has the most outstanding wilderness characteristics. The 27,000 acres analyzed as wilderness under this alternative include the side canyons of North Wash and areas along the Dirty Devil River. It differs from the preceding Partial Wilderness Alternative in that it does not include any land in the east half of the WSA. The 46,100-acre area within the WSA but outside of that designated as wilderness would be managed in accordance with the Henry Mountain MFP as described for the No Action Alternative. The 27,000-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative. This alternative would likely involve Federal acquisition of one section of in held State land. Two other State sections adjacent to the WSA would probably not be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only.

A summary of specific actions follows.

- The 27,000-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 27,000-acre area development work, extraction, and patenting would be allowed to continue on approximately 700 acres of existing mining claims, provided they are valid. Existing oil and gas leases cover approximately 20,680 acres and would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. This acreage includes 17,680 acres of post-FLPMA leases that contain nonimpairment stipulations, limiting development to those activities that could occur in a manner not degrading to wilderness values. About 300

acres of oil and gas leases in the designated portion of the WSA are under conversion application to combined hydrocarbon leases. The 46,100-acre area not designated wilderness would be open to mineral location, leasing, and sale. Development work, extraction, and patenting of approximately 5,796 acres of existing mining claims as well as future mining claims could occur in the 46,100-acre area if claims are valid. Development of existing leases (approximately 44,560 acres) and future leases (including the 26,240 acres of existing leases in this area that may be converted to combined hydrocarbon leases) could be developed without concern for wilderness values. The area not designated (46,100 acres) would be managed as leasing Category 1 (standard stipulations).

- Domestic livestock grazing in the 27,000-acre wilderness would continue as authorized in the MFP (currently permitted at 74 AUMs). No livestock facilities are located or are planned in the 27,000-acre wilderness. In the 46,100-acre nonwilderness area grazing use would continue as authorized in the MFP (1,026 AUMs). New range facilities and improvements as previously described could be developed in this portion of the WSA without concern for wilderness values.
- In the 27,000-acre wilderness, new water resource facilities or watershed activities not related to livestock or wildlife management would be allowed only if enhancing to wilderness, if necessary to correct conditions that are imminently hazardous to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act*. In the remaining 46,100-acre area, water resource facilities would be allowed without wilderness considerations if in accordance with the MFP. None are currently planned.
- In the 27,000-acre wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. It is assumed that continuation of the desert bighorn sheep reintroduction program would be allowable under this alternative in the entire 73,100-acre WSA as long as wilderness protection criteria (refer to Appendix 1) are met in the wilderness portion.
- The 27,000-acre wilderness would be closed to vehicular use. The remainder of the unit

would remain open to vehicular travel. The 23.6 miles of vehicular ways and mining roads and the currently "cherry-stemmed" roads near Cove and Rock Canyons would be in the nonwilderness area and would be open to vehicular use.

- A specific Wilderness Management Plan would be developed that would govern use and protection of the 27,000-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trail-head parking. This border would be up to 100 feet from the edge of the road travel surface or the edge of the right-of-way for State Highway 95, whichever is greater.
- Harvest of forest products in the 27,000-acre wilderness would not be allowed except for harvest of pinyon nuts or non-commercial gathering of dead-and-down wood if accomplished by other than mechanical means. The remaining 46,100 acres would be open to woodland harvest.
- Visual resources on the 27,000 acres of wilderness would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change. The remaining 46,100 acres would be managed as VRM Class II on 5,700 acres and Class III on 40,400 acres, as currently set forth in the Henry Mountain MFP.
- Within the 27,000-acre wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be limited to hand and aerial techniques. In the 46,100-acre area not designated, control measures could be taken without concern for wilderness values.
- In the entire 73,100-acre WSA any activity for the purpose of gathering information about natural resources would be allowed by permit. In the 27,000-acre wilderness such activity would be limited to activities that could be conducted without use of motorized equipment or construction of temporary or permanent structures.

- In the entire 73,100-acre area hunting and fishing would be allowed subject to applicable State and Federal laws and regulations. In the 27,000-acre wilderness, use would be limited to nonmotorized means.
- In the 27,000-acre wilderness area, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, but only under conditions that would ensure minimal disturbance to wilderness values. Poison baits or cyanide guns would not be allowed. In the 46,100-acre area not designated, control of predators would be allowed for the same reasons but without wilderness restrictions.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

Unless otherwise indicated, information for this section is taken from the Henry Mountain Planning Area Unit Resource Analysis (USDI, BLM, 1974 and 1982c) and other BLM technical reports and documents.

Air Quality

The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979). The air quality in the WSA and surrounding area is generally excellent. It is classified as a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act as amended. The WSA is within 6 miles of Canyonlands National Park, a Class I area.

Geology

The Fiddler Butte WSA is located in the Canyonlands section of the Colorado Plateau Physiographic Province. In general, this province is characterized by arid and semiarid climate, deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FIDDLER BUTTE WSA

Alternatives				
Resource	No Action	All Wilderness (73,100 Acres)	Partial Wilderness Designation (32,700 Acres) (Proposed Action)	Partial Wilderness Designation (27,000 Acres)
Air Quality	Air quality could be degraded up to the PSD Class II limitations. Visual range could be reduced in the vicinity of Canyonlands National Park for 130 to 160 years.	No degrading of air quality would result.	Impacts to air quality would be similar to those discussed for the No Action Alternative.	Impacts to air quality would be similar to those discussed for the No Action Alternative.
Geology	Geologic structure could be altered by in-situ tar sand extraction on 16,460 acres.	No alteration of geologic structure would result.	Affects would be similar to those discussed for the No Action Alternative.	Impacts to geology would be similar to those discussed for the No Action Alternative.
Soils	Over the short term, soil loss could increase 46 percent over existing conditions. Soil loss would increase by up to 44,982 cubic yards per year.	Over the short term, soil loss would increase 0.2 percent over existing conditions. Soil loss would increase by up to 108 cubic yards per year.	Over the short term, soil loss could increase 38 percent over existing conditions. Soil loss would increase by up to 37,206 cubic yards per year.	Over the short term, soil loss would increase 43 percent over existing conditions. Soil loss would increase by up to 41,993 cubic yards per year.
Vegetation	The anticipated maximum of 16,660 acres disturbed would affect more than one-fourth of the WSA's sparse vegetation if surface disturbances occurred in vegetated areas. Rehabilitation in the desert environment would be difficult.	No significant impacts to the vegetation resource would occur.	Up to 13,780 acres of vegetation could be disturbed. Rehabilitation in the desert environment would be difficult.	Impacts would be similar to those discussed for the No Action Alternative.
Water Resources	Extensive tar sand development could disrupt the recharge of springs in the WSA. Ground water quality in the WSA could also be lowered.	No significant impacts to the water resource in the WSA would occur.	Impacts to water quality would be similar to those discussed for the No Action Alternative.	Impacts to water quality would be similar to those discussed for the No Action Alternative.
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 960 million to 1.26 billion barrels of oil from tar sand, 50,000 tons of copper, and 1,000 tons of uranium oxide.	Oil, gas, and tar sand likely would not be recovered. Assuming a worst-case analysis, copper and uranium recovery would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.	Although likelihood is low, up to 1.5 million barrels of oil, 9 billion cubic feet of natural gas, 990 to 1.05 billion barrels of oil from tar sand, 25,000 tons of copper, and 250 to 500 tons of uranium oxide could be recovered.	Although likelihood is low, up to 1.8 million barrels of oil, 10.5 billion cubic feet of natural gas, 900 to 1.14 billion barrels of oil from tar sand, 29,000 tons of copper, and 300 to 600 tons of uranium oxide could be recovered.

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FIDDLER BUTTE WSA

Resource	Alternatives		
	No Action	All Wilderness (73,100 Acres)	Partial Wilderness Designation (32,700 Acres) (Proposed Action)
Wilderness Values	Wilderness values could be lost on up to 16,660 acres (23 percent of the WSA), but the values in the rest of the WSA would not be affected.	Wilderness values would be protected, except on up to 40 acres (less than 1 percent of the WSA) which may be disturbed by development of valid mineral rights.	Wilderness values would be protected, except on 10 acres which could be disturbed by development of valid existing rights. Additional impairment could be expected on one-third of the 40,400 acres not designated. Overall, wilderness values could be lost on 19 percent of the WSA. However, all of the area meeting the standard for outstanding opportunities for solitude and primitive recreation and 78 percent of the area meeting the standard for naturalness would be in the designated portion and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be consistent with the <i>Garfield County Master Plan</i> , State of Utah plans and policies, and the current BLM Henry Mountain MFP. It would not complement the NPS proposal for nearby wilderness in the Glen Canyon National Recreation Area.	This alternative would not be consistent with Garfield County's concept of multiple use. It would be consistent with State policy if lands were exchanged, and would complement the NPS proposal for wilderness. Designation would constitute an amendment of the BLM Henry Mountain MFP.	Partial designation would be the same as the All Wilderness Alternative, except that the portion not designated would be consistent with Garfield County's plans, State of Utah plans and policies, and the current BLM Henry Mountain MFP.
Socio-economics	Annual local sales of less than \$54,746 and Federal revenues of up to \$197,260 would continue. An additional \$23,580 per year could be derived from leasing of presently unleased areas.	Annual local sales of less than \$54,746 and Federal revenues of up to \$1,540 would continue, but Federal revenues of up to \$219,300 from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.	The effects of this alternative would be about the same as for the All Wilderness Alternative except that annual Federal revenues would be reduced by up to \$56,040.
			Wilderness values would be protected, except on 17 acres which could be disturbed by development of valid mineral rights. Additional impairment could be expected on approximately one-third of the 40,400 acres not designated. Overall, wilderness values could be lost on 22 percent of the WSA. However, all of the area meeting the standard for solitude, 83 percent of the area meeting the standard for primitive recreation, and 79 percent of the area meeting the standard for naturalness would be in the designated portion and would be protected by reduced potential for disturbance.
			Consistency would be about the same as with the 32,700-acre Partial Wilderness Alternative.

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FIDDLER BUTTE WSA

Resource	Alternatives			
	No Action	All Wilderness (73,100 Acres)	Partial Wilderness Designation (32,700 Acres) (Proposed Action)	Partial Wilderness Designation (27,000 Acres)
Wildlife	About 23 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.	Wildlife in the designated area would benefit from solitude. About 34 percent of the nondesignated portion could be disturbed by mineral and energy exploration and development, which could adversely affect wildlife habitat.	Effects would be about the same as for the 32,700-acre Partial Wilderness Alternative.
Livestock	Grazing of 1,100 AUMs and maintenance of existing developments would continue. A proposed new spring development could be constructed. Surface disturbance could temporarily reduce the number of available AUMs.	Grazing of 1,100 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. The proposed spring development would probably be allowed.	Grazing of 1,100 AUMs and maintenance of existing developments would continue. The proposed spring development would be in the undesignated portion and could be allowed.	Effects would be about the same as for the 32,700-acre Partial Wilderness Alternative.
Visual Resources	The quality of visual resources could be impaired on up to 16,660 acres.	Visual quality could be impaired on 40 acres.	Visual quality could be impaired on 13,780 acres (including 17 acres in the designated portion). All of the Class A scenery would be within the designated portion and would be protected by the reduced potential for disturbance.	Visual quality could be impaired on 15,593 acres (including 17 acres in the designated portion). All of the Class A scenery would be in the designated portion and would be protected by the reduced potential for disturbance.
Cultural Resources	Surface disturbance of 16,660 acres would subject cultural resources to inadvertent damage or destruction.	No significant impacts to the cultural resources in the WSA would occur.	Impacts to cultural resources would be similar to those discussed for the No Action Alternative.	Impacts to cultural resources would be similar to those discussed for the No Action Alternative.
Recreation	ORV use would continue on 23.6 miles of ways at current low levels. Overall recreational use could increase from the present 60 visitor days per year to 90 over the next 20 years. Up to 16,660 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 23.6 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.	ORV recreational use would continue on 23.6 miles of ways in the undesignated portion.	Effects would be about the same as for the 32,700-acre Partial Wilderness Alternative.

The WSA is typical of a high, mid-latitude dry desert. All exposed formations are sedimentary and include, in ascending order, the White Rim, Moenkopi, Chinle, Wingate, Kayenta, and Navajo.

Topography west of the Dirty Devil River consists of high, narrow ridges cut deeply and abruptly by narrow, meandering canyons. The canyons of North Wash average 5 to 8 miles in length. They do not connect with the Dirty Devil River; a cliff over 1,000 feet high separates the two areas. Hatch Canyon, a tributary of the Dirty Devil River, is over 5 miles long and over 500 feet deep in places.

East of the Dirty Devil River, the topography changes to low rolling hills and benchlands above the Colorado River. This area includes Fiddler Butte and The Block (two connected North and South Blocks), large flat-topped mesas with near vertical 1,200-foot cliffs. There are also several isolated buttes and mesas.

Soils

The soils in the WSA are mostly shallow or semishallow desert sandy loams. Table 2 summarizes soil erosion conditions in the WSA. Soil erosion conditions were determined using soil surface factors (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	17,420	24	47,034
Moderate	1.3	23,960	33	31,148
Slight	0.6	31,720	43	19,032
Stable	0.3	0	0	0
Total		73,100	100	92,214

Sources: USDI, BLM, 1982; Leifeste, 1978.

Vegetation

This WSA is located in the Navajo Basin phyto-geographic subdivision, represented in part by the natural vegetation and floristic and physiographic regimes of the Henry Mountains (Neese, 1981). The WSA's existing vegetation includes blackbrush, mixed desert shrub, shadscale, and rabbitbrush. Table 3 summarizes major existing vegetation types. Small areas of riparian vegetation are found along the Dirty Devil River and around springs and in wash bottoms. The acreage

of riparian vegetation is small and has not been listed on Table 3.

There are no known threatened or endangered plant species in the WSA. However, two sensitive plant species, *Astragalus rafaensis* and *Astragalus monumentalis*, have been reported to occur within the WSA. Location and distribution of these species within the WSA have not been verified. Almost one-fifth of the WSA is bare rock outcrop.

The Fiddler Butte WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The PNV types of the WSA are listed on Table 4. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

TABLE 3
Existing Vegetation Types

Existing Vegetation Types	Acres	Percent of WSA
Blackbrush	20,800	28
Rock outcrops, sand	11,455	16
Mixed desert shrubs	8,920	12
Shadscale	23,400	32
Pinyon-juniper	5,925	8
Assorted grasses and forbs	2,600	4
Total	73,100	100

Source: USDI, BLM, 1982c.

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	41,050	56
Blackbrush	24,750	34
Saltbrush-greasewood	4,900	7
Galleta three-awn shrubsteppe	2,400	3
Total	73,100	100

Source: USDI, Geological Survey, 1978.

Water Resources

Known surface waters in the WSA include two springs (Cove Spring and South Hatch Canyon Spring) and about 4 miles of the Dirty Devil River. Other springs/seeps probably exist in the major canyons (Marinus, Stair, and Butler). These canyons flow into North Wash, a large tributary of Lake Powell. The Dirty Devil is the only perennial

stream in the WSA. There is a high potential for flash flooding during thunderstorm periods in the canyon section of the WSA. There are no quantitative or qualitative data regarding these water sources.

There are no developed wells in this area. Potential for underground water does exist because a water-bearing sandstone aquifer (White Rim Formation) is within 1,000 feet or less of the surface.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is 'low to moderate, due to a marginally favorable geologic environment. An overall importance rating (OIR) of 2+ was assigned to the Fiddler Butte WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA. All resources within the WSA were assigned favorabilities of f2 or less, with the exception of the uranium resource which was rated as f3.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The energy and mineral resource rating summary is given in Table 5.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian

needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common. Supplies currently exceed domestic demand. Silver would be found in only small amounts in the WSA.

TABLE 5
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels; less than 60 billion cubic ft.
Tar Sand	f4	c4	More than 500 billion barrels ³
Coal	f1	c4	None
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None
Uranium	f3	c3	500-1,000 tons uranium oxide
Gold	f1	c1	Little to none
Silver	f1	c1	Little to none
Copper	f2	c1	Less than 50,000 tons

Source: SAI, 1982 and 1984.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

³There could be 780 million to 100 billion barrels of recoverable oil in the WSA (Campbell and Ritzma, 1979).

LEASABLE MINERALS

Tar sand is the only leasable mineral known to exist in the WSA. Approximately 26 percent (41,250 acres) of the 157,339-acre Tar Sand Triangle STSA is included in this WSA (USDI, BLM, 1983b). The remainder of the STSA is under BLM (42,150 acres), NPS (58,419 acres), and State of Utah (15,520 acres) jurisdiction.

No other leasable minerals are known to exist. However, based on this WSA's geographic location in the Paradox Basin and other geologic factors, oil, gas, and carbon dioxide may occur. There are currently no active drilling or other exploration activities taking place in the WSA. Exploration activities have taken place in the recent past but no wells have been drilled.

Oil and Gas

SAI (1982) estimates the WSA's oil and gas in-place reserves at less than 10 million barrels of oil or less than 60 billion cubic feet of natural gas, respectively. The recoverable reserves are estimated at less than 3 million barrels of oil or less

than 18 billion cubic feet of gas. (Refer to Appendix 6 for estimates of recoverability.)

Approximately 65,240 acres of the WSA are currently under oil and gas lease. Approximately 8,690 acres of these leases are pre-FLPMA and 56,550 acres are post-FLPMA (USDI, BLM, 1984b). Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Of the 65,240 acres of oil and gas leases, 26,240 are under application for conversion to combined hydrocarbon leases. If converted they would be considered as new post-FLPMA leases.

Approximately 70,283 acres are being managed under leasing Category 1 (open to leasing with standard stipulations), and approximately 2,817 acres are being managed as leasing Category 2 (open to leasing with standard and special stipulations).

Tar Sand

Tar sand deposits occur principally in the White Rim Sandstone of Permian Age (Campbell and Ritzma, 1979). Approximately 56 percent (41,250 acres) of the WSA is in the Tar Sand Triangle STSA, which is a hydrocarbon deposit containing between 12.5 and 16 billion barrels of heavy oil in-place according to estimates of Campbell and Ritzma (1979). This area of overlap is located east of the Dirty Devil River and contains an estimated

3.2 to 4.2 billion barrels of in-place oil. Estimates based on past study indicate that approximately 30 percent of the in-place oil could be recovered by in-situ methods. Therefore, a rough estimate would indicate that between 960 million to 1.26 billion barrels of recoverable oil may be within the boundaries of the WSA.

Approximately 26,240 acres of existing conventional oil and gas leases within the WSA are currently under application for conversion to combined hydrocarbon leases. Industry plans of operation for the area include commercial-scale upgrading plants and in-situ fields to produce approximately 70,000 barrels per day. Although the potential tar sand resource is high in the WSA, the probability for development is low due to topographic and economic restraints.

LOCATABLE MINERALS

There are no known commercial deposits of locatable minerals in the WSA. Based on existing information, there is a geologic possibility for the occurrence of uranium and copper in the Moss Back Member of the Chinle Formation. Less than 50,000 tons of copper and 500 to 1,000 tons of uranium oxide are thought to occur within the WSA (SAI, 1982). Currently there is no active exploration or mining activity taking place, but some exploration work was done in the 1950s. Approximately 6,496 acres of the WSA are covered by about 350 mining claims. Few appear current in assessment work.

SALABLE MINERALS

There are abundant deposits of riprap and flagstone in the WSA. However, possibilities of any significant quantities being developed are negligible because of the remoteness of the area and difficulty in access.

Wildlife

Game animals in the WSA include mule deer, cottontail, and desert bighorn sheep. The WSA also provides habitat for several furbearers and numerous small mammal species. Depending on the season of the year, a variety of avian species may occur in the WSA. Feral goats may occasionally be sighted.

The entire WSA (73,100 acres) provides substantial range for desert bighorn sheep and limited value range for mule deer. Desert bighorn sheep have been reintroduced into the area on adjacent NPS-administered land. The Utah Division of Wildlife Resources (UWDR) has proposed transplanting bighorn sheep into the WSA.

There are no existing or proposed facilities designed exclusively for wildlife. Wildlife utilize the existing spring and livestock reservoir developments as water sources.

There is one endangered species that may occasionally inhabit the area, the peregrine falcon (*Falco peregrinus*). Although none have been found to date, the WSA contains excellent peregrine falcon habitat. No critical or crucial habitats have been identified. The golden eagle, considered sensitive by BLM, is found throughout the WSA. Bald eagles probably pass through portions of the WSA during migration. Bell's vireo, also considered sensitive, might be found in the WSA.

Forest Resources

The only forest resources within the WSA are about 5,925 acres of noncommercial pinyon-juniper (less than 20 acre-feet/acre/year wood volume growth). The resource is remote and inaccessible; therefore, there is no projected utilization of the resource.

Livestock and Wild Horses/Burros

There are five allotments currently permitted, including one unallocated allotment (Flint Trail) estimated to contain 13 AUMs, for an estimated 1,100 AUMs in the WSA. Refer to Table 6 for summary information on these grazing allotments. Those portions of the WSA west of the Dirty Devil River include Little Rockies, Cedar Point and Trachyte Allotments. The Little Rockies Allotment lies within an unallotted area where there is no livestock grazing or rangeland improvements.

Areas east of the Dirty Devil are in the Sewing Machine Allotment and, to a small degree, in the Flint Trail Allotment, which lies within an unallotted area. There is no livestock grazing in the Flint Trail Allotment at this time.

Within the WSA, there are 18 reservoirs and one spring development, all located within the Sewing Machine Allotment. There are eight reservoir reconstructions and a spring development proposed. There are no proposals for vegetation treatment within the WSA.

The approximately 23.6 miles of vehicular ways and mining roads and the 11 miles of "cherry-stemmed" roads near Cove and Rock Canyons are used for access to livestock development and for livestock management.

There are no wild horses or burros in this WSA.

TABLE 6
Livestock Grazing Use Data

Subject	Allotments				
	Cedar Point	Trachyte	Little Rockies	Flint Trail	Sewing Machine
Livestock Class	Cattle	Cattle/ Sheep	Unallotted	Unallotted	Cattle
Permittees	3	3	11	11	4
Percent of Allotment in WSA	3	Less than 1	33	Less than 1	40
Livestock Forage in WSA (AUMs)	71	3	0	13	1,013

Source: USDI, BLM, 1982c.

Visual Resources

The WSA possesses high scenic values. The canyons of the North Wash drainage are characterized by sheer cliffs, colorful rock formations, and sparse vegetation. Immediately west of the Dirty Devil River is a line of cliffs over 1,000 feet high. Hatch Canyon is also visually interesting; here, in the wide canyon surrounded by high, cliffed mesas, colors vary from white to dark brown. Also, east of the Dirty Devil River there are several red buttes and the North and South Blocks, large mesas.

The southwest boundary of the WSA along North Wash is visible from Highway U-95, a major travel route eligible for designation as a scenic highway under the Highway Beautification Act of 1965. Portions of Hatch Canyon and the Dirty Devil River are visible from a secondary travel route leading through Poison Springs Wash and South Hatch Canyon to Glen Canyon NRA.

Under the BLM Visual Resource Evaluation System the WSA's visual characteristics were given ratings as shown in Table 7. BLM's VRM rating system is explained in Appendix 7.

TABLE 7
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	26,000	36
Class B	47,100	64
Class C	0	0
Management Class		
Class I	0	0
Class II	30,550	42
Class III	42,550	58
Class IV	0	0

Source: USDI, BLM, 1982c.

Cultural Resources

The WSA has five identified archaeological sites southeast of The Block and another 10 sites in the canyons of North Wash. The latter area includes three petroglyph panels and one vandalized rock-shelter. Two additional sites (campsite and lithic scatter) are known to be located in the area between North and South Hatch Canyons. The potential for finding additional sites in the WSA is rated as high. There are no known historic sites or National Register sites within the WSA. There are potential National Register sites immediately adjacent to the WSA in North Wash and on the South Block. Most of the archaeological sites are indicative of the Archaic period.

Recreation

Sixteen recreational opportunities were evaluated for their quality in this WSA. Thirteen opportunities are present in varying degrees. There are four distinct areas in this WSA (canyons of North Wash, canyons of the Dirty Devil River, The Block, and benchlands east of the Dirty Devil River), and the recreational opportunities have wide variations in quality.

Backpacking and camping opportunities are fair in the side canyons of North Wash due to the canyon's short length, lack of campsites and water, and limited opportunities for loop trips. The longest of these canyons, Marinus Canyon, has a hiking route of approximately 6.5 miles. However, this same area has very good opportunities for dayhiking due to the ease of year-round access and the variety of short trips.

A portion of the WSA south of Poison Springs Wash (including the Dirty Devil River and the mouth of Hatch Canyon) is adjacent to potential wilderness in Glen Canyon NRA. Here, extended trips are possible, assuming a car shuttle is used. Two hiking routes, each 5 miles in length, connect with a 20-mile route in the NRA that ends at Hite Crossing. There is potential for a 4-mile side trip up Fiddler Cove Canyon. Good quality opportunities for photography can be found in this portion of the WSA.

During periods of high water in the spring (April-June), it is possible to kayak or float down the Dirty Devil River from Poison Springs Canyon to Lake Powell. The 4-mile section of the river within the WSA is a Nationwide Rivers Inventory segment with potential for study and addition to the National Wild and Scenic Rivers System. Since it is an inventory-listed segment, the BLM must, as part of its environmental review process, avoid or

mitigate adverse impacts to the river and consult with the NPS before taking any action that could foreclose wild, scenic, or recreational river status (Council on Environmental Quality, 1980).

No recreational opportunities are considered of particularly good quality in the benchlands east of the Dirty Devil River. In general, the size and configuration of this area, its low physical features, and intrusions related to mining activity limit opportunities for hiking, camping, backpacking, and other activities. The many roads and 23.6 miles of ways in this area and The Block contribute to recreational access. The extent to which they are used for this purpose is not known.

The Block (North and South Block) has opportunities for dayhiking, backpacking, camping, photography, and sightseeing. There is one primitive trail leading on to the top of the South Block. From there, a narrow ridge, or land bridge, provides access to the North Block. Overall, the terrain, vistas, and remote location of this mesa contribute to outstanding opportunities for backpacking and photographing scenic vistas.

Visitor use is estimated at 60 visitor days annually. Use is low primarily due to a lack of publicity, remote location, difficult access to much of the area, and other competing recreational areas nearby. A small number of commercial permits have been issued to one commercial operator since 1980. The southwest boundary is U-95, Utah's highly scenic Bicentennial Highway; therefore, that portion of the WSA is readily accessible to recreationists.

Wilderness Values

SIZE

This WSA contains 73,100 acres and is approximately 12 miles at its widest (east-west) point by 11 miles at its longest point. Portions of the WSA west of the Dirty Devil River are contiguous with a 22,000-acre area in Glen Canyon NRA proposed for wilderness designation by the NPS.

NATURALNESS

West of the Dirty Devil River (22,200 acres), the WSA is in a completely natural condition. Here there are no human intrusions requiring rehabilitation.

East of the Dirty Devil River, the quality of naturalness varies considerably. The top of The Block, an isolated mesa of about 3,500 acres in the WSA, is essentially pristine and has few, if any, signs of human activity. Portions of the benchlands around The Block are natural but there are several intrusions.

In the southeast portion of the WSA are approximately 1 mile of ways and 7.5 miles of maintained pre-FLPMA “cherry-stemmed” roads in The Cove. The sparse vegetation and general lack of topographic screening make these intrusions substantially noticeable. Although these intrusions were deleted from the WSA, they are readily visible from surrounding areas.

There is a pre-FLPMA mining road approximately 3.5 miles in length that follows the west fork of Rock Canyon to a point near the southwest corner of The Block. This intrusion was also deleted from the WSA through “cherry-stemming.”

A way (approximately 6 miles) connects the two areas described above, but it is substantially unnoticeable. There are also several stock reservoirs in the vicinity that were considered substantially unnoticeable.

There are approximately 16.6 miles of roads and ways north of The Block in the Fiddler Butte and North and South Hatch Canyon areas. While there is no current mining activity, uranium exploration and assessment work are ongoing. Portions of these roads are graded and are substantially noticeable intrusions. There is an old airstrip in South Hatch Canyon that is being reclaimed naturally, but it is still substantially noticeable. Overall, 64,300 acres of the WSA meet the *Wilderness Act* criteria for naturalness.

SOLITUDE

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) in the WSA are influenced by size, topography, vegetation, and absence of distracting sights and sounds. This WSA has a wide variety of topographic features, and the quality of solitude varies considerably.

In the canyons of North Wash and the Dirty Devil River, the quality of solitude is outstanding due to the number, variety, size, and configuration of several isolated canyons. Although they are relatively short in length, their number and twisting configuration, when considered together, offer dispersion for visitors. Vegetation is sparse in these areas and is not a contributing factor to solitude. There are no outside sights and sounds that would adversely affect the visitor's ability to find a secluded spot, with the exception of areas immediately adjacent to Highway U-95. Overall, opportunities for solitude in this portion of the WSA (25,600 acres) are outstanding.

The top of The Block (North and South Block) contains about 3,500 acres of land in an irregular configuration. Overall size and configuration

could force visitors into close proximity to each other at some locations, particularly the land bridge connecting the North and South Blocks. Vegetation screening is provided by dense pinyon-juniper vegetation and moderate topographic screening. There are scenic views of the Henry Mountains, Dirty Devil River Canyon, Dark Canyon, Cataract Canyon, Canyonlands National Park, and the Abajo Mountains that enhance the experience of solitude. Opportunities for solitude on The Block are judged outstanding.

The benchlands surrounding The Block generally consist of low, rolling hills with sparse, low-growing vegetation. Topography would force visitors into traveling around the base of The Block or the other buttes in the area. Solitude is adversely affected by some of the mining activity, roads, and ways in the immediate area, such as in The Cove and around Fiddler Butte. These factors impair opportunities for solitude, which were judged less than outstanding in this eastern portion of the WSA (39,400 acres).

The dominant feature of the northeast portion of the WSA is an unnamed mesa located between North and South Hatch Canyons. The mesa top is sparsely covered with pinyon-juniper woodland and brush. Visitors would be forced into close proximity in this area. The surrounding benchlands contain sparse vegetation resulting in little chance for seclusion for visitors. Opportunities for solitude in this portion of the WSA are considered less than outstanding (8,100 acres).

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive and unconfined recreation were evaluated by considering miles of potential hiking routes in relationship to the WSA's size, the number and variety of recreational opportunities present, and an evaluation of the quality of these opportunities. As discussed previously in the Recreation section, the recreational opportunities vary, depending on location in the WSA.

In the west portion of the WSA, recreational opportunities for dayhiking are considered outstanding in the canyons of North Wash due to the variety of hiking routes and ease of access (bordered by Highway U-95). This area (22,200 acres) meets the standards of the *Wilderness Act*.

Opportunities for backpacking and photography are outstanding along the Dirty Devil River and The Block. These two areas constitute about 10,500 acres.

Recreational opportunities are less than outstanding in the benchlands east of the Dirty Devil

River, and this area does not offer a diversity of recreational opportunities that could be considered outstanding. This area covers about 40,400 acres.

SPECIAL FEATURES

Special features of this WSA include cultural resources (with a high potential for finding additional sites), the scenery along the canyons of the Dirty Devil River, and the views from The Block.

Land Use Plans and Controls

There are no private in-holdings, private subsurface rights, or rights-of-way in the WSA. There are eight State sections inside the WSA and three State sections adjacent to the WSA. The State policy is to maximize economic returns of their lands.

A 22,000-acre NPS wilderness proposal in the Glen Canyon NRA is adjacent to portions of the WSA west of the Dirty Devil River.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers this WSA. The Master Plan recognizes that the County possesses "... some of the most spectacular scenery in the United States The county is sparsely populated and most of it is in its original pristine condition." In the plan, the county proposed that 111,053 acres of BLM land in three WSAs and 31,600 acres of Forest Service lands in one Forest Service roadless unit within Garfield County be recommended to the Utah Congressional Delegation as wilderness. The Fiddler Butte WSA was not included in this acreage, but rather was recommended to be retained for such multiple uses as forestry, livestock grazing, mining, wildlife, and recreation.

The WSA is managed under the BLM Henry Mountain Planning Area MFP (USDI, BLM, 1982c) which generally allows for multiple use as described in the No Action Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Socioeconomics

DEMOGRAPHICS

The WSA lies within Garfield County, one of Utah's least populated and most rural counties. In 1980, the Garfield County population was 3,673, reflecting a population density of 0.71 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981; University

of Utah, Bureau of Economic and Business Research, 1982).

The only communities close to the WSA are Hanksville, a small community of approximately 351 people located about 25 road miles to the north of the WSA in Wayne County, and Ticaboo, a village of about 150 to 200 people located 32 road miles south of the WSA in Garfield County.

EMPLOYMENT

The principal commercial center for the region is Richfield, Utah, located in Sevier County (South et al., 1983). Garfield County is one of the poorest counties in the State of Utah (South et al., 1983). Government is the largest employment sector within Garfield County and represents 21 percent of the work force followed by construction, services, manufacturing, and agriculture (refer to Table 8). The county, however, maintains a diversified economic base (South et al., 1983). The Town of Escalante relies on farming, stock-raising, and lumbering, supplemented by tourism, some oil production, and government employment (South et al., 1983). Another town, Boulder, continues to rely on agriculture.

TABLE 8
1980 Employment
Garfield County, Utah

Industrial Sector	Number	Percent
Agriculture	236	11
Mining	210	10
Construction	379	17
Manufacturing	248	11
Transportation, Communication, and Utilities	85	4
Wholesale and Retail Trade	125	6
Finance, Insurance, and Real Estate	16	1
Services	266	12
Government	457	21
Nonfarm Proprietors	157	7
Total	2,179	100

Sources: Utah Department of Employment Security, 1980; USDC, Bureau of Economic Analysis, 1982.

INCOME AND REVENUES

In Garfield County, the nonfarm industry sector in 1980 produced over 96 percent of total labor and proprietors' income, representing an annual growth rate of 22.2 percent (University of Utah, Bureau of Economic and Business Research, 1982) (refer to Table 9). Almost 80 percent of this income came from the private sector, principally mining, construction, and manufacturing, while government sources produced approximately 20

TABLE 9
1980 Personal Income and Earnings
Garfield County, Utah

Type/Source	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietor Income (Earnings)	24,792	21.9
Total Labor and Proprietor Income by Industry Source		
Farm	949	16.6
Nonfarm	23,843	22.2
Private	19,049	26.5
Agricultural Service and Other	79	(D)
Mining	4,222	47.0
Construction	5,536	66.5
Manufacturing	3,294	14.2
Transportation and Public Utilities	1,545	16.8
Wholesale Trade	96	1.3
Retail Trade	1,302	7.6
Finance, Insurance and Real Estate	189	(D)
Services	2,786	16.3
Government	4,794	10.8

Sources: USDC, Bureau of Economic Analysis, 1982; University of Utah, Bureau of Economic and Business Research, 1982.

(D) Not shown to avoid disclosure of confidential information or for items \$50,000 or less. Data are included in totals.

percent of personal income and earning for the county. Farming produced 3.8 percent of the county's total personal income, amounting to \$949,000.

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

TABLE 10
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Mining Claim Assessment	Less than \$32,500	None
Oil and Gas Leases	None	\$195,720
Livestock Grazing	\$22,000	\$1,540
Recreational Use	Less than \$246	Unknown
Total	Less than \$54,746	Up to \$197,260

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

The WSA has approximately 325 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of these claims are current in assessment work.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment and income.

Ten livestock operators have a total grazing privilege of 1,100 AUMs within the WSA including one unallocated allotment estimated to contain 13 AUMs that are presently unused. If all forage in the WSA were utilized, it would account for \$22,000 of livestock sales including \$5,500 of ranchers' returns to labor and investment.

The WSA's recreational use is low. Related local expenditures are low and are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicated that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use of the Fiddler Butte WSA is estimated as about 60 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Garfield or Wayne County.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 10).

Oil and gas (including tar sand) leases in the WSA cover approximately 65,240 acres. At \$3 per acre, lease rental fees generate up to \$195,720 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, there are 1,100 AUMs in the WSA that could potentially be used. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$1,540 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas, tar sand, uranium, and copper exploration and development. The area would be open to resource use and development without controls for wilderness protection. The magnitude of development is unknown but would probably be low due to the WSA's

rough terrain and low resource potential for most minerals. The potential for the tar sand resource is high although development could be restricted due to the proximity of the WSA to Canyonlands National Park and economic restraints. The probability that oil and gas, uranium, or copper would be developed is low due to both resource and economic restraints. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and cause the following disturbance: tar sand, 16,460 acres; conventional oil and gas, 160 acres; and uranium and copper, 40 acres for a total of 16,660 acres of disturbance in the WSA. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) The most heavily disturbed area would be the Tar Sand Triangle STSA east of the Dirty Devil River.

The effects of full tar sand development under the No Action Alternative would be extensive and are not analyzed fully in this document because development would extend beyond the boundaries of the WSA. This document only considers the effects of potential tar sand development as it relates to the Fiddler Butte WSA. For more information on the impacts of tar sand development in the Tar Sand Triangle STSA, the reader is referred to the *Tar Sand Triangle Draft EIS* (USDI, NPS and BLM, 1984) and the *Utah Combined Hydrocarbon Leasing Regional Final EIS* (USDI, BLM, 1984c).

AIR QUALITY

Disturbance from uranium, copper, and conventional oil development would have little effect on the air quality of the area. However, if tar sand development occurs in the Tar Sand Triangle STSA, industry plans of operation for the area include a commercial-scale upgrading plant and in-situ field that would produce pollutant emissions and hydrocarbon odors similar to a conventional oil refinery and well field (USDI, NPS and BLM, 1984). These emissions would consist of total suspended particulates, sulfur dioxide, carbon monoxide, and volatile organic compounds that would cause a localized decrease in visibility during the life of the operation, with a potential loss in visual range in the vicinity of Canyonlands National Park. However, the WSA would continue to be managed by the State of Utah as a PSD Class II area, and air quality could be reduced only up to the PSD Class II limitations. Also, the proximity of the WSA to Canyonlands National Park may result in further restriction of tar sand development to meet PSD Class I limitations. Disturbance of 16,660 acres would result in increases in fugitive dust emissions with additional

potential for loss in visual range in the vicinity of Canyonlands National Park.

GEOLOGY

Excavation of locatable minerals (i.e., uranium and copper) would only occur on up to 40 acres and would not affect the area's geology. Also, slight surface disturbance on up to 160 acres from oil and gas exploration and development activities would not significantly affect geology. Tar sand development on 16,460 acres in the WSA by in-situ methods could result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rock-fall on ledges in the WSA.

SOILS

It is estimated that up to 16,660 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with critical and moderate erosion classes (worst-case analysis) and that erosion condition would increase one class, soil loss on the 16,660 acres would increase from 44,982 cubic yards/year to 89,964 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual soil loss in the WSA would increase an estimated 44,982 cubic yards/year (46 percent) to 142,196 cubic yards/year.

VEGETATION

Approximately 16 percent (11,455 acres) of the WSA consists of bare rock outcrops and steep slickrock canyons. The remaining 84 percent (61,645 acres) of the WSA is vegetated with pinyon, juniper, middle grasses, blackbrush, and assorted grasses, shrubs, and forbs. Assuming the worst-case situation for analysis purposes, the anticipated maximum of 16,660 acres disturbed could denude as much as one-fourth of the WSA's sparse vegetation if all surface disturbance occurred in vegetated areas of the WSA. If this development occurred, rehabilitation of the area to its former condition might be impossible, possibly causing portions of existing and PNV types to be permanently modified through scarring of the landscape.

Two species of sensitive plants are found within or near the WSA. Before authorizing surface-disturbing activities (16,660 acres potential) the BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, the BLM would consult with the U.S. Fish and Wildlife Service (FWS) as required by BLM policy (refer to Appendix 4). Because

necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of *Astragalus monumentalis* and *Astragalus rafaelsensis* would be preserved, although some individual plants would likely be lost.

WATER RESOURCES

Extensive tar sand development could disrupt the recharge of the area's springs. Increased erosion of up to 44,982 cubic yards/year could increase sedimentation in the drainages of the WSA. The amount of sediment would depend on such variables as where the disturbance occurred, the intensity of wind and rainstorms during vulnerable periods, and the effectiveness of erosion control measures and reclamation. Since precipitation is low and, with the exception of 4 miles of the Dirty Devil River, all streams are ephemeral, there would not be significant effects on surface water quality.

Development of ground water for a tar sand industry could occur. However, mineral exploration and development in the area is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

The water requirement for a 70,000 barrel per day (BPD) tar sand industry would be 11,079 acre-feet/year for 130 years (USDI, BLM, 1984c). That portion of the WSA overlapped by the Tar Sand Triangle STSA covers approximately 41,250 acres (approximately 26 percent of the STSA) and, under this alternative, could be developed. Development of ground water could occur within the WSA to help meet water requirements for tar sand production on the WSA or on adjacent areas. In-situ tar sand injection activities within the WSA and on adjacent areas would lower the quality of ground water within the WSA (USDI, NPS and BLM, 1984).

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil in-place (3 million recoverable) or up to 60 billion cubic feet of natural gas (18 billion cubic feet recoverable) exists within the WSA. Under this alternative, these oil and gas resources could be explored and developed, subject to Category 1 stipulations on 70,283 acres and Category 2 stipulations on 2,817 acres. Approximately 160 acres of surface disturbance would take place if

exploration and development were to occur. However, due to the small size and likelihood of these potential deposits, no production is expected.

Tar Sand

Approximately 41,250 acres of the WSA are within the Tar Sand Triangle STSA. Approximately 26,240 acres of existing leases are under lease conversion application. Tar sand could be explored and potentially developed in the future under this alternative. Between 960 million and 1.26 billion barrels of oil could be recovered from tar sand in the WSA. It is estimated that up to 16,460 acres of surface disturbance would occur from tar sand development. Although the tar sand resource is known to occur within the WSA, the likelihood of production of oil from tar sand is thought to be low due to economic and terrain restraints.

Locatable Minerals

Under this alternative, the entire WSA would remain open to mining claim location. Locatable mineral development work, extraction, and patenting could occur. The potential deposit of up to 50,000 tons of copper and 500 to 1,000 tons of uranium oxide could be developed. Approximately 40 acres could be disturbed due to exploration and development of these locatable mineral resources. However, the likelihood of locatable mineral production is thought to be low because of economic considerations (e.g., transportation, low potential, etc.).

WILDLIFE

Overall, under this alternative, wildlife would be negatively affected due to the potential surface disturbance on about 16,660 acres from mineral and energy exploration and development. This would disrupt wildlife populations and result in mobile species leaving the disturbed area for the duration of these activities. Some species would either perish or coexist with the disturbances at smaller and less viable population levels. As much as 21 percent of the substantial value yearlong desert bighorn sheep range (73,100 acres) in the WSA would be disturbed; therefore, bighorn sheep would leave and would not become established in the eastern part of the WSA.

Some sensitive species, such as Bell's vireo and golden eagle, would avoid the disturbed area but, overall, would not be adversely affected. The peregrine falcon, an endangered species that may occasionally inhabit the area, would probably avoid the disturbed area for the duration of the mineral exploration and development activities.

Prior to taking any action that could jeopardize the continued existence of a listed threatened or endangered species, Section 7 consultation required under the provisions of the Endangered Species Act would be initiated with the FWS. Appropriate mitigation measures would be applied.

Following rehabilitation and reestablishment of vegetation, wildlife could benefit from improved forage and development of water sources (reservoirs and springs) that could be completed without consideration of wilderness values.

FOREST RESOURCES

Under this alternative, the area would be available for forest product harvest. However, there are few trees (scattered pinyon and juniper) in the WSA and no present or anticipated harvest is expected due to inaccessibility and adequate supplies elsewhere. Disturbance of 16,660 acres for mineral and energy exploration and development could destroy the scattered patches of pinyon and juniper in the WSA. This would not be a significant loss of forest products due to the limited nature of the resource in the WSA.

LIVESTOCK

Domestic livestock grazing would continue at 1,100 AUMs as authorized in the Henry Mountain Planning Area MFP including about 13 AUMs in a presently unallocated allotment. Existing roads and ways could continue to be used for livestock management, and new livestock facilities could be constructed without concern for wilderness values, if in conformance with the MFP. The existing spring and 13 reservoirs in the WSA could be maintained and the proposed renovation of the spring and eight reservoirs and construction of one spring development could be carried out.

Surface disturbance of as much as 16,660 acres from mineral and energy exploration and development could reduce available forage for cattle. If all 16,660 acres of disturbance were within the Sewing Machine Allotment, a likelihood due to its location within the Tar Sand Triangle STSA, as much as 13 percent of the forage in the allotment could be disturbed and/or destroyed, thus reducing the available AUMs accordingly. Following reclamation of disturbed areas, additional forage could be available for livestock.

VISUAL RESOURCES

Even though mitigation measures would be applied to minimize visual contrast created by intrusions, visual values in areas affected by the estimated 16,660 acres of surface disturbance

from mineral and energy exploration and development would be degraded and VRM Class II and III management objectives would probably not be met during the short term. After rehabilitation, visual resources would be restored to meet VRM Class II and Class III objectives. Even after mitigation and rehabilitation, some permanent degradation would result. Loss of visual quality associated with vegetation removal for tar sand development would be unavoidable and would persist for 70 years or longer (USDI, NPS and BLM, 1984). With tar sand development, visual quality would be significantly reduced in the area as a whole.

CULTURAL RESOURCES

Disturbance of as much as 16,660 acres by mineral exploration and development under this alternative would subject cultural resources to inadvertent damage or destruction. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would lessen impacts. Even though mitigation measures would be taken, the overall effect on cultural resources could be significant due to the high amount of cultural resources anticipated in the area. Vandalism of sites would be expected to increase in proportion to the general population increase and the increase in new access roads and ways associated with tar sand development.

RECREATION

Under this alternative, up to an estimated 16,660 acres (approximately 23 percent of the WSA) could be disturbed by energy and mineral exploration and development. Those disturbances (e.g., roads, drill pads, pipelines, etc.) would result in a loss of most, if not all, of the WSA's primitive recreation values. Approximately 23.6 miles of existing vehicular ways or mineral access roads would be available for vehicular use for recreational access. Anticipated population increases and new roads from mineral-related exploration and development could result in increased recreational use within the region and the WSA; however, the quality of the recreation experience in the WSA would be reduced greatly because of degradation of primitive recreation values. Tar sand development in the Tar Sand Triangle STSA within or near the Fiddler Butte WSA would also degrade primitive recreational values in the adjoining Dirty Devil, Horseshoe Canyon (South), and French Spring-Happy Canyon WSAs and the proposed wilderness in Glen Canyon NRA and Canyonlands National Park, where there would be increases in sounds and airborne emissions and possible reductions in visual range (USDI, NPS and BLM, 1984).

If the area were not designated wilderness, the 4-mile section of the Dirty Devil River in this WSA would not receive additional protection for its wild and scenic river qualities. Even with avoidance and mitigation required prior to disturbance, wild, scenic, and recreational values of the river could be reduced during tar sand development.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. Without tar sand development the rate of recreational use could increase from 60 current visitor days per year to 90 visitor days at the end of 20 years. With tar sand development the WSA would not be used for primitive recreation because of degradation of primitive recreation values.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Henry Mountain Planning Area MFP. Expected mineral and energy exploration and development could disturb an estimated 16,660 acres (approximately 23 percent of the WSA). With tar sand development on 16,460 acres, wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features including scenic and cultural values), would be lost or diminished throughout the WSA as a whole. Tar sand development in the Tar Sand Triangle STSA in and near the Fiddler Butte WSA would also degrade wilderness values in the adjoining Dirty Devil, Horseshoe Canyon (South), and French Spring-Happy Canyon WSAs and the proposed wilderness in Glen Canyon NRA and Canyonlands National Park, where sights, sounds, and airborne emissions would degrade solitude, visual range, and primitive recreational values (USDI, NPS and BLM, 1984).

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Garfield County Master Plan*, which favors multiple use other than wilderness for this WSA. It would not be consistent with the NPS wilderness proposal in the adjacent Glen Canyon NRA. This alternative is based on implementation of the BLM Henry Mountain Planning Area MFP. It would, therefore, be in conformance with the MFP, which has also been reviewed by the Governor of Utah and found to be consistent with plans of the State of Utah.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If tar sand, uranium, and copper were developed in the WSA it would lead to a significant increase in population, employment, and income for Garfield and Wayne Counties. Tar sand development would create extensive changes in socioeconomic conditions affecting all economic sectors and the infrastructures of Hanksville and possibly Ticaboo and Green River, Utah. A detailed study of the effects of tar sand development within the Fiddler Butte WSA has not been completed. For information on the socioeconomic impacts of tar sand development in the general vicinity of the WSA the reader is referred to the *Tar Sand Triangle Draft EIS* (USDI, NPS and BLM, 1984) and the *Utah Combined Hydrocarbon Leasing Regional Final EIS* (USDI, BLM, 1984c). However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

Without tar sand development there would be no livestock-related economic losses because the existing potential grazing use (1,100 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. If tar sand is developed, livestock forage and related sales and ranchers' return to labor and investment could be initially reduced but could increase as disturbed areas are reclaimed.

As discussed in the Recreation section, without tar sand development, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase only 30 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would likely not be significant to the local economy. Potential increases in nonprimitive recreation could lead to increases in recreation-related income. With tar sand development, primitive recreation in the WSA and related local income could be eliminated. Because existing visitation is only about 60 visitor days per year, this loss would not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. In addition to the 65,240 acres

presently leased for oil and gas (up to \$195,720 in lease fees), there are 7,860 acres in the WSA open to oil and gas leases that are currently not leased. If leased, they would bring up to \$23,580 additional Federal lease fee revenues per year in addition to new royalties from lease production if oil and gas were discovered. Tar sand production would bring a royalty of 12.5 percent for products removed from the lease area. Assuming a 70,000-BPD operation, royalties would be substantial. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (up to \$1,540 per year) would continue unless tar sand development disturbed sufficient acreage to require reductions in livestock forage use. There is some potential for increases in livestock forage allocation and related revenues following reclamation of disturbed lands. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (73,100 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 73,100-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 23.6 miles of existing vehicular ways and mining roads in the WSA would be closed to vehicular use except when permitted by BLM as noted in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis, it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities and that tar sand conversion areas would be either converted with restrictive nonimpairment stipulations or denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed. (Appendix 10 lists surface disturbance assumptions and estimates for the WSA.)

Because potentially disturbed areas would be of a much smaller magnitude than under the No Action Alternative (40 vs. 16,660 acres) and because tar sand development would contain nonimpairment stipulations, the impacts from development and surface disturbance of 40 acres under the All Wilderness Alternative would be largely insignificant.

AIR QUALITY

Air quality would benefit from the reduction of possible disturbance from 16,660 acres to 40 acres. It is unlikely that fugitive dust from exploration and development of uranium and copper within the WSA would reduce visibility in the WSA as a whole or in adjacent WSAs or NPS-managed areas. However, if tar sand development occurred in the portion of the Tar Sand Triangle STSA outside the WSA, reduction in visibility in the WSA and in adjacent NPS areas could still occur, although this impact would be reduced.

GEOLOGY

No effect on the geologic structure of the WSA would result from 40 acres of surface disturbance.

SOILS

The soil resource could benefit from the All Wilderness Alternative because of the reduced likelihood of surface-disturbing activities. It is estimated that up to 40 acres could be disturbed from mineral exploration. Assuming that all disturbance would occur in areas with a critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 40 acres would increase from an estimated 108 cubic yards/year to 216 cubic yards/year. However, soil loss would decrease as reclamation occurred. The time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual soil loss from surface disturbance in the WSA would increase an estimated 108 cubic yards/year (0.2-percent increase over present soil loss), to approximately 81,878 cubic yards per year. The increase would be 44,874 cubic yards per year less than under the No Action Alternative.

VEGETATION

A possible 40 acres could be disturbed by mineral exploration, primarily uranium and copper. This would not significantly alter the composition of vegetation types in the WSA. Mitigation would be applied to protect the sensitive plant species *Astragalus raphaelensis* and *Astragalus monumetalis*. Some individual plants could be inadvertently lost, but the extent of possible impact would be considerably less.

WATER RESOURCES

Surface water in the WSA (springs, seeps, and the Dirty Devil River) could be expected to benefit from this alternative because of the reduced likelihood of surface disturbance from tar sand activities disrupting the recharge area. Because precipitation is low, no significant sedimentation

or change in total dissolved solids (TDS) is expected to occur because of an estimated annual increase in soil loss of 108 cubic yards from surface disturbance on up to 40 acres.

Development of ground water for a tar sand industry within the WSA would be foregone. Mineral exploration and development in the WSA would generally be confined at or near the surface or with widely spaced wells and would not significantly affect the quantity or quality of ground water in the WSA. The water requirement for a 70,000-BPD tar sand industry in the adjacent part of the Tar Sand Triangle STSA outside the WSA would be 11,079 acre-feet/year for 130 years. Development of ground water within the WSA to help meet water requirements for production on adjacent areas would be foregone. Water from adjacent areas would be available (11,079 acre-feet/year) for other uses after the 130-year tar sand production period.

In-situ tar sand development in areas adjacent to the WSA could, over time, lower quality of the ground water in this WSA. However, under this alternative present water quality would remain in the WSA for a longer period because the aquifer would not be injected directly. Lower quality water could migrate into the area from distant injection activities (USDI, NPS and BLM, 1984). The time required for ground water contamination through migration cannot be determined with the limited information available.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Approximately 65,240 acres (8,690 acres pre-FLPMA and 56,550 acres post-FLPMA) are under oil and gas leases. Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be renewed.

Exploration for and development of a recoverable resource of up to 3 million barrels of oil in-place or less than 18 billion cubic feet of natural gas could be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Tar Sand

Approximately 41,250 acres of the WSA are part of the Tar Sand Triangle STSA, and approximately 26,240 of these acres are under lease conversion application. If no production on converted leases has occurred prior to lease expiration, the existing leases would not be reissued. If production has occurred prior to wilderness designation, production could continue subject to nonimpairment standards. However, because these stipulations are so restrictive, no development is anticipated.

It is concluded that, due to nonimpairment standards and closure to future leasing, tar sand development within the WSA would not occur. Therefore, the potential for recovery of 960 million to 1.26 billion barrels of recoverable oil would be foregone.

Locatable Minerals

Approximately 6,496 acres are under mining claim for uranium within the WSA. Up to 50,000 tons of copper and from 500 to 1,000 tons of uranium oxide may occur within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines with consideration given to protecting wilderness values. After that date, all other lands in the WSA would be closed to prospecting and development (USDI, BLM, 1981b). The worst-case impact to mineral resources would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of copper and uranium in the WSA would be foregone. It is estimated that, if minerals are located prior to wilderness designation, up to 40 acres could be disturbed due to exploration and development of locatable mineral resources, primarily uranium and copper. However, production of these metals is not currently occurring due to economic considerations (e.g., transportation, low potential, etc.), and it is unlikely that development would occur even without wilderness designation. Therefore, it is concluded that this alternative would not result in any significant loss of recoverable uranium and copper resources.

WILDLIFE

Wildlife would benefit from this alternative due to the preservation of solitude and naturalness. Populations would remain about the same due to possible wilderness restrictions on future water or other wildlife developments, although no developments for wildlife are currently planned. Desert bighorn sheep may migrate or be transplanted into the area under this alternative.

The 40 acres of surface disturbance that could occur from mineral exploration and development would disrupt some wildlife populations and result in mobile species (such as deer) leaving the disturbed area for the duration of these activities. Less mobile species (such as the side-blotched lizard) would either perish or coexist with the disturbances at smaller and less viable population levels. Under this alternative less than 1 percent of substantial value yearlong desert bighorn sheep habitat and limited value mule deer habitat within the WSA would be disturbed. Therefore, this disturbance would not adversely affect the distribution and abundance of bighorn sheep and mule deer. The peregrine falcon (endangered), which may occasionally inhabit the area, the bald eagle (endangered), which may occasionally visit the area, and sensitive species, such as Bell's vireo and golden eagle, would avoid the disturbed area. However, overall, these species would not be adversely affected.

FOREST RESOURCES

Surface disturbance would be reduced from 16,660 acres under the No Action Alternative to 40 acres under the All Wilderness Alternative. Therefore, the scattered pinyon and juniper trees in the WSA would be protected.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP (currently 1,100 AUMs of which 13 AUMs are unallocated). Unallocated forage could be used if not in conflict with wilderness values and if in conformance with the Henry Mountain Planning Area MFP. Use of existing livestock developments could continue as in the past. Existing ways closed to vehicular use could continue to be used to maintain existing livestock developments, if permitted by BLM. However, closure of these ways for other purposes could cause some inconvenience for livestock management.

The 40 acres of potential disturbance would have no effect on livestock use of the WSA. Designation of the WSA as wilderness would prevent any short-term loss of forage due to tar sand exploration and development.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only

natural ecological change), through closure of the entire area to ORV use, and through closure to future mineral leasing and location.

Under this alternative, phasing out oil and gas and combined hydrocarbon leases would reduce possible mineral-related surface disturbance to that associated with development of existing mining claims. Potential disturbance would be reduced from 16,660 acres to 40 acres. Although mitigative measures would be applied to minimize visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining claims are located throughout the WSA (worst-case analysis), VRM Class I objectives might not be met on large portions of the WSA. However, because the potential for development of mining claims is low and because only 40 acres would be disturbed, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

Approximately 40 acres could be disturbed by mineral exploration and development in the WSA; however, inventories for cultural resources conducted prior to these activities would allow for mitigation. Inadvertent loss or damage to cultural resources could occur although the potential loss would be much less under this alternative than under the No Action Alternative due to the reduction in potential acreage disturbed. The protection afforded by wilderness designation would outweigh any increase in vandalism due to increased recreational use, and the overall effect would be positive.

RECREATION

This alternative would benefit primitive recreation by reducing the likelihood of surface-disturbing activities within the WSA, thereby protecting primitive recreation values and increasing management recognition of these values. Tar sand development in the Tar Sand Triangle STSA outside but adjacent to the Fiddler Butte WSA could degrade primitive recreational values in the WSA through sounds, airborne emissions, and reductions in visual range. The overall effect on visitation is unknown. Paved roads or new access related to tar sand development could lead to increases in visitation to the WSA.

In addition, as discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20

years in relation to population increases and current trends of recreational use. Existing recreational use is estimated at only 60 visitor days annually.

Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. If recreation use increases, commercial operations based on primitive recreational activities could apply for use of the WSA.

Approximately 23.6 miles of existing vehicular ways and mining roads would be closed and, therefore, limit recreational access in the WSA.

Designation would provide additional protection to the wild and scenic qualities of the 4-mile section of the Dirty Devil River that is in the Fiddler Butte WSA. Designation would complement use of the Glen Canyon NRA proposed wilderness because the portion of the Fiddler Butte WSA along the Dirty Devil River serves as access to the proposed NPS wilderness.

WILDERNESS VALUES

Designation and management of the entire 73,100 acres as wilderness would contribute to the preservation of the area's wilderness values of size, naturalness, outstanding opportunities for solitude and primitive and unconfined recreation, and special features including scenic and cultural values. Wilderness designation of that portion of the WSA along the Dirty Devil River would complement the values and uses of adjacent NPS-proposed wilderness because it would serve as an access route to that area.

Although recreational use could increase (refer to Recreation section), use relative to the size of the area would be low. Therefore, no significant impact on solitude (outstanding on 25,600 acres) and primitive recreation values (outstanding on 32,700 acres) from increased recreation would be expected. Naturalness could be impaired in localized areas affected by the anticipated 40 acres of surface disturbance from mineral exploration and development within the WSA. That disturbance would also impair opportunities for solitude and primitive recreation in localized areas; however, no significant impact in the area as a whole would be expected from mineral-related activity within the WSA.

Tar sand development in the Tar Sand Triangle STSA outside but adjacent to the WSA would degrade wilderness values in the WSA through sounds, airborne emissions, and reductions in visual range. The magnitude of the potential loss is unknown but would continue for the life of the tar sand projects, approximately 130 to 160 years.

LAND USE PLANS AND CONTROLS

The *Garfield County Master Plan* favors multiple use of the lands within the Fiddler Butte WSA. This alternative is generally consistent with the multiple-use concept since most resource uses would continue, although under more restrictive conditions. However, this alternative would conflict with the county's multiple-use concept because oil and gas and combined hydrocarbon leases would expire and would not be renewed and future leasing and location of minerals would not be allowed. This alternative would be consistent with the adjacent 22,000-acre NPS wilderness proposal.

The BLM Henry Mountain Planning Area MFP does not provide for wilderness. A decision by Congress to designate the WSA as wilderness would be an amendment to the MFP. Because the State land within the WSA would be exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10) as well as loss of potential increases in population, income, and Federal revenues that could occur under the No Action Alternative.

The major socioeconomic benefits and drawbacks of tar sand production from the WSA (i.e., increased personal income and demands placed on community infrastructure) would not occur. However, tar sand production from the portion of the Tar Sand Triangle STSA outside the WSA could occur and could result in major socioeconomic impacts in Garfield, Wayne, and possibly Emery Counties (USDI, NPS and BLM, 1984). Because about 26 percent of the Tar Sand Triangle STSA is within the WSA, the duration and size of potential tar sand projects in the region could be significantly reduced to the point that some projects could become infeasible.

Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with up to \$22,000 of livestock sales including \$5,500 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would be insignificant to both the local economy and individual businesses.

The loss of 65,240 acres now leased would cause an eventual loss of up to \$195,220 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$23,580 annually in Federal revenues from the 7,860 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

Federal grazing fees would continue as at present with a possible collection of \$1,540 per year.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. One commercial outfitter occasionally uses the WSA.

Partial Wilderness Alternative (32,700 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 32,700-acre area designated as wilderness and the 40,400-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, the existing mining claims would eventually be explored and developed, causing an estimated 20 acres of disturbance. It is also assumed that existing oil and gas leases in the designated

portion would expire before production of commercial quantities and that tar sand conversion areas would be either converted with nonimpairment stipulations or denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed.

It is assumed that, within the nondesignated area, 13,760 acres (80 acres, oil and gas; 13,660 acres, tar sand; and 20 acres, uranium and copper) would be disturbed sometime in the future due to exploration and development activities.

Overall, 13,780 acres of surface disturbance could occur within the WSA; 2,880 acres less than under the No Action Alternative and 13,740 acres more than with the All Wilderness Alternative. (Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.)

AIR QUALITY

Air quality would benefit from the reduction of mineral and energy related disturbance from a possible 16,660 acres to 13,780 acres. Disturbance of 13,780 acres within the WSA as well as disturbance for tar sand development outside the WSA could reduce the visibility in the WSA and in adjacent NPS areas, although the magnitude would be reduced as compared to the No Action Alternative. The WSA would continue to be managed by the State of Utah as a PSD Class II area, and air quality could be reduced only up to the PSD Class II limitations. Also, the proximity of the WSA to Canyonlands National Park may result in restriction of tar sand development to meet PSD Class I limitations. Disturbance of 13,780 acres could result in increases in fugitive dust emissions with a potential loss of visual range in the vicinity of Canyonlands National Park.

GEOLOGY

No impacts to geology are expected from excavation of locatable minerals (i.e., uranium and copper) on up to 40 acres. Also, possible surface disturbance on up to 80 acres from oil and gas exploration and development activities would not affect the area's geologic structure. However, tar sand development on the 20,440 acres of the Tar Sand Triangle STSA under lease conversion in the nondesignated portion could result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rockfall on ledges in the WSA.

SOILS

The portion of the WSA that would be designated wilderness could benefit because of the reduced

likelihood of surface-disturbing activities. Assuming that 20 acres of soil would be disturbed by mineral exploration in the area that would be designated as wilderness, no significant impacts to soil would be expected. Up to 13,760 acres could be disturbed by mineral and energy exploration and development in the area that would not be designated wilderness. Assuming that all disturbance would occur in areas with critical erosion condition (worst-case analysis) and that erosion condition would increase one class, soil loss on the 13,780 total acres disturbed would increase from 37,206 cubic yards/year to 74,412 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual soil loss in the WSA would increase an estimated 37,206 cubic yards/year (38 percent). This is 7,776 cubic yards per year less than with the No Action Alternative and 37,098 cubic yards per year more than with the All Wilderness Alternative.

VEGETATION

Under this alternative, vegetation would be protected on the 32,700 acres that would be designated wilderness, except for as much as 20 acres that could be disturbed from mineral exploration and development.

In the area that would not be designated wilderness, as much as 13,760 acres could be disturbed from mineral and energy exploration and development activities.

If full development should occur, up to 19 percent of the WSA's sparse vegetation could be disturbed or denuded. Portions of the existing vegetation and PNV types could be permanently modified through scarring of the landscape by access roads, tailing dumps, mill sites, commercial-scale upgrading plants, etc. However, management would be provided through the Henry Mountain Planning Area MFP, which would not allow disturbance of this magnitude to occur to the sparse vegetation within the WSA without mitigative measures.

Two species of sensitive plants could be disturbed within the WSA. Before authorizing surface-disturbing activities, BLM would conduct site-specific clearances of the disturbed areas and would take necessary measures to protect these plants. The viability of populations of these plants would be maintained. The potential for inadvertent disturbance of these species would be less under the Partial Wilderness Alternative than under the No Action Alternative because the potential for surface disturbance would be less.

WATER RESOURCES

Impacts to water resources under this alternative are expected to be less than under the No Action Alternative and greater than under the All Wilderness Alternative. Surface water would benefit because of the reduced likelihood for surface disturbance, as described in the All Wilderness Alternative. However, extensive tar sand development in the area that would not be designated wilderness could disrupt recharge of the area's springs.

Increased erosion of up to 37,206 cubic yards/year could increase sedimentation in drainages. The amount of increase would depend on such variables as where the disturbance occurred, the intensity of windstorms, rainfall during vulnerable periods, and the effectiveness of erosion control measures and reclamation.

Mineral exploration and development is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

The water requirement for a 70,000-BPD tar sand industry in the Tar Sand Triangle STSA would be 11,079 acre-feet/year for 130 years (USDI, BLM, 1984c).

That portion of the WSA in the Tar Sand Triangle STSA in the designated area covers approximately 7,000 acres (approximately 10 percent of the STSA). Under this Partial Wilderness Alternative, this area would not be developed. Therefore, 11,079-acre-feet/year of water for a 70,000-BPD operation would be required for 125 years as opposed to 130 years under the No Action Alternative. Development of ground water within the area that would be designated to help meet water requirements for production on adjacent areas would be foregone. Water from the nondesignated portion would be available for other uses after the 125-year tar sand production period.

In-situ tar sand development in the area that would not be designated and in areas adjacent to the WSA could lower quality of the ground water in the WSA. However, under this alternative, water quality would remain of a higher quality in the area that would be designated for a longer period because the aquifer would not be injected directly. Lower quality water would have to migrate from distant injection activities (USDI, NPS and BLM, 1984). The time for ground water contamination through migration cannot be determined with available information.

MINERAL AND ENERGY RESOURCES

Under this alternative, up to 20 acres of surface disturbance from mineral exploration activities could occur in the area that would be designated wilderness. In the area that would not be designated, up to 13,760 acres of surface disturbance could occur from mineral and energy exploration and development activities. Appendix 10 lists the factors used to determine surface disturbance assumptions and estimates.

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 28,190 acres of oil and gas leases in the area that would be designated wilderness; approximately 2,240 acres are pre-FLPMA and 25,950 acres are post-FLPMA. Activities on these leases could occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource (less than 10 million barrels of in-place oil or less than 60 billion cubic feet of in-place natural gas) occurs within the area that would be designated wilderness under this alternative. Therefore, it is assumed that the amount of resource lost would be in direct proportion to the size of the area designated. Using this assumption, exploration and development of a potential resource of less than 5 million barrels of oil in-place (1.5 million barrels recoverable) or less than 30 billion cubic feet of in-place natural gas (9 billion cubic feet recoverable) could be foregone.

The present leasing Category 1 would not change in the area that would not be designated wilderness. There are approximately 37,050 acres of existing oil and gas leases in this area. Under this alternative, it is assumed that exploration and development for a potential resource of up to 5 million barrels of in-place oil (1.5 million barrels recoverable) or 30 billion cubic feet of in-place natural gas (9 billion cubic feet recoverable) would not be foregone in the area that would not be designated. It is estimated that up to 80 acres of surface disturbance could occur from oil and gas exploration and development activities on this portion of the WSA.

Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss of recoverable oil and gas resources.

Tar Sand

Approximately 7,000 acres (4 percent) of the Tar Sand Triangle STSA lie within the portion of the WSA that would be designated; approximately 5,800 acres are presently under lease conversion application in this area. If no production on these leases has occurred prior to expiration, the existing leases would not be reissued. If production has occurred prior to exploration, production could continue subject to nonimpairment standards. However, because these stipulations are so restrictive, no development is anticipated.

Due to nonimpairment stipulations issued at time of leasing and closure to future leasing, tar sand development within the portion of the WSA that would be designated wilderness would not occur. Assuming that the resource is evenly distributed throughout the Tar Sand Triangle STSA, the potential for recovery of 150 to 190 million barrels of oil would be foregone.

The present leasing Category 1 would not change in the area that would not be designated wilderness. There are approximately 20,440 acres of tar sand presently under lease conversion application in this area. Future leasing could occur in this area. Under this alternative, it is estimated that, if the resource is evenly distributed throughout the Tar Sand Triangle STSA, 990 million to 1.05 billion barrels of recoverable oil would have potential for exploration and recovery in the area that would not be designated. It is estimated that up to 13,660 acres of surface disturbance could occur from tar sand exploration and development activities on this portion of the WSA.

Locatable Minerals

Approximately 2,546 acres of mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines with wilderness considerations. After designation, all lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potentially in-place resource (less than 50,000 tons of copper and 500 to 1,000 tons of uranium oxide) is within the area that would be designated wilderness under this alternative. Therefore, it is assumed that the amount of potential resource recovery lost would be in direct proportion to the size of the area designated. The worst-case impact for minerals would occur if none of the potentially locatable mineral resource would be within a valid

claim at the time of designation. Using these assumptions, the potential for exploration and development of up to 25,000 tons of copper and 250 to 500 tons of uranium oxide could be foregone in the area that would be designated wilderness.

Approximately 3,950 acres of mining claims fall within the area that would not be designated wilderness. Development work, extraction, and patenting could continue to occur on these claims. It is estimated that up to 20 acres could be disturbed due to exploration on the area that would not be designated as wilderness. Under this alternative, it is estimated that exploration and development of a potential resource of up to 25,000 tons of copper and 250 to 500 tons of uranium oxide could occur on this portion of the WSA.

Because production of these metals is not currently occurring within the WSA and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that development would occur even without partial wilderness designation. Therefore, it is concluded that this alternative would not result in any significant loss of economically recoverable locatable minerals.

WILDLIFE

Wildlife could benefit from this alternative due to the preservation of solitude and naturalness on 32,700 acres that would be designated wilderness. Although future water developments on the designated area would not be allowed unless compatible with wilderness values, none are currently planned nor is there an identified potential for water development in the designated area. Therefore, restraints for wilderness protection would not conflict with potential habitat improvement in the area.

About 20 acres of surface disturbances could occur from mineral exploration on the area that would be designated. This could disrupt some wildlife populations and result in mobile species leaving the disturbed area for the duration of these activities. Less mobile species would either perish or coexist with the disturbances at smaller and less viable population levels. Less than 1 percent of substantial value yearlong desert bighorn sheep habitat and limited value mule deer habitat in the WSA would be disturbed. Therefore, this would not adversely affect the distribution and abundance of these animals. Peregrine falcon, the only endangered species that may occasionally inhabit the area, bald eagle, an endangered species that may visit the area during migration, and sensitive species, such as Bell's vireo and

golden eagle, would also avoid the disturbed areas. However, overall, none of these species would be adversely affected because the disturbed area would be small and appropriate mitigative measures would be taken.

In the area that would not be designated, 13,760 acres of possible surface disturbance from mineral and energy exploration and development would disrupt wildlife. Wildlife species would be dispersed from the disturbed area for the duration of these activities. As much as 18 percent of the substantial value yearlong desert bighorn sheep range and limited value mule deer range in the WSA would be disturbed. Desert bighorn sheep and mule deer would avoid the disturbed area. Less mobile wildlife would either perish or coexist at smaller and less viable population levels. Peregrine falcon, bald eagle, and some sensitive species, such as Bell's vireo and golden eagle, would avoid the disturbed area. Following mineral development and production, wildlife could benefit from development of water sources (none are currently planned) that could be completed without consideration of wilderness values and from improved forage after rehabilitation.

FOREST RESOURCES

There are few trees (scattered pinyon and juniper) in the WSA and no present or anticipated harvest of these trees other than occasional use by recreationists. Therefore, there would be little change in utilization of the forest resource.

LIVESTOCK

In the area that would be designated wilderness livestock grazing would continue as authorized in the Henry Mountain MFP (currently 213 AUMs). Use would not occur in the Little Rockies Allotment, which does not produce livestock forage within the WSA.

There are no existing livestock developments in this area, nor are any proposed. Surface disturbance of up to 20 acres in this area would not affect livestock use of the area.

In the area that would not be designated, grazing use (currently 887 AUMs including 13 unallocated) would also continue as authorized in the MFP. Surface disturbance of approximately 13,760 acres due to mineral and energy exploration and development could reduce available forage for cattle. If development of this magnitude occurred, as much as 12 percent of the Sewing Machine Allotment's livestock forage would be disturbed and/or destroyed, thus reducing the available AUMs. However, following reclamation, additional forage could be available to livestock. All existing

and proposed livestock developments are in this portion of the WSA, and they could be maintained and developed without concern for wilderness values.

VISUAL RESOURCES

In the 32,700-acre portion that would be designated wilderness, the colorful canyon scenery of the North Wash drainage, the Dirty Devil River drainage, and the large mesa called The Block (North and South Block) would be protected because of VRM Class I management, ORV closure, and closure to future mineral leasing and location. As much as 20 acres of surface disturbance from mineral exploration of existing claims could result in a localized degradation of visual values, but no significant impact in this portion as a whole would be expected.

In the 40,400-acre portion that would not be designated, 5,700 acres would continue to be managed under VRM Class II standards and 34,700 acres as VRM Class III. Management class objectives could not be met on 13,760 acres disturbed by mineral and energy exploration and development. Disturbances would create long-term contrasts; however, with rehabilitation, VRM objectives could probably eventually be met.

CULTURAL RESOURCES

The protection afforded by wilderness management would outweigh any potential vandalism problems due to increased recreation use, and the overall impact would be positive. As much as 20 acres could be disturbed by mineral exploration and development in the area that would be designated wilderness; however, inventories for cultural resources conducted prior to these activities would identify those sites involved and mitigate any adverse impact to them. Inadvertent loss or damage to cultural resources could occur; however, this is expected to be minimal in the designated portion.

Inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance in the 40,400-acre nondesignated area. However, the area would receive as much as 13,760 acres of surface disturbance and, therefore, the potential for inadvertent loss of cultural values would be greater than with the All Wilderness Alternative.

RECREATION

Impacts on recreational values and opportunities for the 32,700-acre area that would be designated would be as described in the All Wilderness Alternative. Outstanding primitive recreational activities would be recognized, managed, and

preserved. The wild and scenic qualities of 4 miles of the Dirty Devil River would receive additional protection as compared to the No Action Alternative. The BLM wilderness would provide access to the adjacent NPS-proposed wilderness. Mineral-related surface disturbance on up to 20 acres in the area that would be designated could cause localized impairment of recreation values.

In the area that would not be designated (40,400 acres), little change in recreational use is expected due to the limited recreational values present in that portion. Mineral and energy exploration and development activities on up to 13,760 acres would degrade or destroy primitive recreational values in the affected areas and possibly in the area as a whole in that portion of the WSA. Vehicular use would be allowed on the 23.6 miles of vehicular ways and roads in the nondesignated portion of the WSA, and new access could be developed. This would maintain and possibly improve access into the area that could be used for nonprimitive recreational purposes.

WILDERNESS VALUES

Impacts in the 32,700-acre portion that would be designated wilderness would be the same as under the All Wilderness Alternative: size, naturalness (32,700 acres), and outstanding opportunities for solitude (25,600 acres) and primitive recreation (32,700 acres) would be protected. This area includes the best quality scenic areas in the WSA (which is one of the special features). It is not known to what extent the cultural values (also a special feature) are included. Although recreational use could increase, use relative to the size of this area would be low and no significant impacts on solitude or primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from localized mineral exploration on 20 acres within the designated portion. Additionally, sights, sounds, and emissions of activities in the 40,400-acre area that would not be designated could result in loss of solitude and primitive recreation values, especially in the area of The Block (North and South Blocks). The quality of vistas from The Block and in the designated portion of the WSA would be diminished.

In the 40,400-acre area that would not be designated, there could be up to 13,760 acres of surface disturbance from mineral and energy exploration and development. These activities would eliminate naturalness (31,600 acres presently meet the standard for naturalness) and opportunities for solitude and primitive recreation (rated as less than outstanding in this portion of the WSA). Additionally, sights, sounds, and emissions of

mineral and energy activities could impair solitude and primitive recreation values in the Dirty Devil, Horseshoe Canyon (South), and French Spring-Happy Canyon WSAs, in the NPS-proposed wilderness in the Glen Canyon NRA, and possibly in Canyonlands National Park.

LAND USE PLANS AND CONTROLS

Wilderness designation would not be consistent with the *Garfield County Master Plan* which favors multiple uses other than wilderness for the Fiddler Butte WSA. This Partial Wilderness Alternative would be consistent with the wilderness proposal in the Glen Canyon NRA. Because State land within the designated area would be exchanged, wilderness designation would not conflict with the State of Utah policy to maximize economic returns.

The BLM Henry Mountain MFP does not provide for wilderness. A decision by Congress to designate 32,700 acres of the WSA as wilderness would be an amendment to the MFP.

SOCIOECONOMICS

Overall, with partial designation there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10), as well as loss of potential increases in population, income, and Federal revenues that could occur under the No Action Alternative.

The socioeconomic benefits and drawbacks of tar sand production from the 7,000 acres of Tar Sand Triangle STSA within the designated portion of the WSA (5,800 acres are under lease conversion application) that could occur under the No Action Alternative would not occur under partial designation. However, tar sand production from the 34,250 acres of the Tar Sand Triangle STSA in the nondesignated portion (20,440 acres are under lease conversion application) as well as the remainder of the Tar Sand Triangle STSA outside the WSA could occur and could result in major socioeconomic impacts in Garfield, Wayne, and possibly Emery Counties. The size and duration of tar sand projects in the region would be reduced. Precluding future exploration and development of locatable minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action

Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Without tar sand development, livestock use and ranchers' income would continue as at present with a potential of up to 1,100 AUMs of use, \$22,000 of livestock sales, including \$5,500 of ranchers' return to labor and investment. If tar sand is developed in the nondesignated portion of the WSA, livestock forage and related sales and returns could be reduced for several years; however, there is a potential for increased grazing and related sales and returns following reclamation of disturbed areas.

Increased public awareness of the area resulting from designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would be insignificant to both the local economy and individual businesses.

The loss of 28,190 acres now leased would cause an eventual loss of up to \$84,570 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$13,530 annually in Federal revenues from the 4,510 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

Without tar sand development, Federal grazing fees of \$1,540 per year would continue. With tar sand development on the nondesignated portion, livestock forage use and related Federal grazing fees could initially be reduced but could be restored over time.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. One commercial outfitter occasionally uses the WSA.

Partial Wilderness Alternative (27,000 Acres)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion management would be as described for the No Action Alternative. The specific actions that would take place within the 27,000-acre area designated as wilderness and the 46,100-acre nondesignated area are discussed in the Description of the Alternatives section.

It is assumed that, in the designated area, existing mining claims would eventually be explored and developed, causing an estimated 17 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities and that tar sand conversion areas would be either converted with nonimpairment stipulations or denied. Oil and gas leases would not be renewed and future leasing of oil and gas or combined hydrocarbons would not be allowed.

It is assumed that, within the nondesignated area 15,576 acres (93 acres, oil and gas; 15,460 acres, tar sand; and 23 acres, uranium and copper) would be disturbed sometime in the future due to exploration and development activities.

Overall, 15,593 acres of surface disturbance could occur within the WSA; 1,067 acres less than under the No Action Alternative, 15,633 acres more than with the All Wilderness Alternative, and 1,813 acres more than the 32,700-acre Partial Alternative. (Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.)

AIR QUALITY

Air quality would benefit from the reduction of possible mineral-related disturbance from 16,660 acres to 15,593 acres. Still, disturbance of 15,593 acres within the WSA as well as disturbance for tar sand development outside the WSA could reduce the visibility in the WSA and in adjacent NPS areas. The WSA would continue to be managed by the State of Utah as a PSD Class II area, and air quality could be reduced only up to the PSD Class II limitations. Also, the proximity of the WSA to Canyonlands National Park may result in restriction of tar sand development to meet PSD Class I limitations.

GEOLOGY

No impacts to geology are expected from excavation of locatable minerals (i.e., uranium and copper) on up to 40 acres. Also, possible surface disturbance on up to 93 acres from oil and gas exploration and development activities would not affect the area's geologic structure. However, tar sand development on the 38,750 acres of the Tar Sand Triangle STSA in the nondesignated portion (26,440 acres are under lease conversion application) could result in extensive subsurface fracturing and could change the physical rock characteristics and result in subsidence and rock-fall on ledges in the WSA.

SOILS

The portion of the WSA that would be designated wilderness could benefit because of the reduced likelihood of surface-disturbing activities. As-

suming that 17 acres of soil would be disturbed by mineral exploration in the area that would be designated wilderness, no significant impacts to soil would be expected. Up to 15,576 acres could be disturbed by mineral and energy exploration and development in the area that would not be designated wilderness. Assuming that all disturbance would occur in areas with critical and moderate erosion classes (worst-case analysis) and that erosion condition would increase one class, soil loss on the 15,593 acres (in the designated and undesignated portions) would increase from 42,101 cubic yards/year to 84,202 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined. Therefore, under this alternative, soil loss in the WSA would increase at a maximum of 42,101 cubic yards/year (43 percent). This is 2,881 cubic yards per year less than with the No Action Alternative, 41,993 cubic yards per year more than with the All Wilderness Alternative, and 4,895 cubic yards per year more than with the 32,700-acre Partial Wilderness Alternative.

VEGETATION

Under this alternative, vegetation would be protected on the 27,000 acres that would be designated wilderness, except on as much as 17 acres that could be disturbed from mineral exploration and development.

In the area that would not be designated wilderness, as much as 15,576 acres could be disturbed from mineral and energy exploration and development activities.

Overall, if full development should occur, up to 21 percent of the WSA's sparse vegetation could be disturbed or denuded. Portions of the existing vegetation and PNV types could be permanently modified through scarring of the landscape by access roads, tailing dumps, mill sites, commercial-scale upgrading plants, etc. However, management would be provided through the Henry Mountain MFP, which would not allow disturbance of this magnitude to occur to the sparse vegetation within the WSA without mitigative measures.

Two species of sensitive plants could be disturbed within the WSA. Before authorizing surface-disturbing activities, BLM would conduct site-specific clearances of the disturbed areas and would take necessary measures to protect these plants. The viability of populations of these plants would be maintained. The potential for inadvertent disturbance of these species would be less under the Partial Wilderness Alternative than under the No Action Alternative because the potential for surface disturbance would be less.

WATER RESOURCES

Surface water would benefit because of the reduced likelihood for surface disturbance, as described in the All Wilderness Alternative. However, extensive tar sand development in the area that would not be designated wilderness could disrupt recharge of the area's springs.

Increased erosion of up to 42,101 cubic yards/year could increase sedimentation in drainages. The amount of increase would depend on such variables as where the disturbance occurred, the intensity of windstorms, rainfall during vulnerable periods, and the effectiveness of erosion control measures and reclamation.

Mineral exploration and development is generally confined at or near the surface or with widely spaced wells and, with the exception of tar sand injection activities, would not significantly impact ground water.

The water requirement for a 70,000-BPD tar sand industry in the Tar Sand Triangle STSA would be 11,079 acre-feet/year for 130 years (USDI, BLM, 1984c).

That portion of the Tar Sand Triangle STSA in the area that would be designated covers 2,500 acres (approximately 2 percent of the STSA). Under this partial designation alternative, this area would not be developed. Therefore, 11,079-acre feet/year of water for a 70,000-BPD operation would be required for 127 years as opposed to 130 years under the No Action Alternative. Development of ground water within the area that would be designated to help meet water requirements for production on adjacent areas would be foregone. Water from the nondesignated portion would be available for other uses after the 127-year tar sand production period.

In-situ tar sand development in the area that would not be designated and in areas adjacent to the WSA could lower quality of the ground water in the WSA. However, under this alternative, higher water quality would remain in the area that would be designated for a longer period because the aquifer would not be injected directly. Lower quality water would have to migrate from distant injection activities (USDI, NPS and BLM, 1984). The time for ground water contamination through migration cannot be determined with limited available information.

MINERAL AND ENERGY RESOURCES

Under this alternative, up to 17 acres of surface disturbance could occur in the area that would be designated wilderness from mineral exploration activities. In the area that would not be designated, up to 15,576 acres of surface disturbance

could occur from mineral and energy exploration and development activities. (Appendix 10 lists the factors used to determine surface disturbance assumptions and estimates.)

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. There are approximately 20,680 acres of oil and gas leases in the area that would be designated wilderness; approximately 3,000 acres are pre-FLPMA and 17,680 acres are post-FLPMA. Activities on these leases could occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource (less than 10 million barrels of in-place oil or less than 60 billion cubic feet of in-place natural gas) occurs within the area that would be designated wilderness under this alternative. Therefore, it is assumed that the amount of resource lost would be in direct proportion to the size of the area designated. Using this assumption, exploration and development of a potential resource of less than 4 million barrels of oil in-place (1.2 million barrels recoverable) or 25 billion cubic feet of in-place natural gas (7.5 billion cubic feet recoverable) could be foregone.

The present leasing Category 1 would not change in the area that would not be designated wilderness. There are approximately 44,560 acres of existing oil and gas leases in this area. Under this alternative, it is assumed that exploration and development of a potential resource of up to 6 million in-place barrels of oil (1.8 million barrels recoverable) or 35 billion cubic feet of in-place natural gas (10.5 billion cubic feet recoverable) in the area would not be foregone in the area that would not be designated. It is estimated that up to 93 acres of surface disturbance could occur from exploration and development activities for conventional oil and gas on this portion of the WSA.

Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss of recoverable oil and gas resources.

Tar Sand

Approximately 2,500 acres of the Tar Sand Triangle STSA lie within the portion of the WSA that would be designated; approximately 300 acres are presently under lease conversion application in this area. If no production on these leases has occurred prior to expiration, the existing leases

would not be reissued. If production has occurred prior to expiration, production could continue subject to nonimpairment standards. However, because these stipulations are so restrictive, no development is anticipated.

Due to nonimpairment stipulations issued at time of leasing and closure to future leasing, tar sand development within the portion of the WSA that would be designated wilderness would not occur. Assuming that the resource is evenly distributed throughout the Tar Sand Triangle STSA, the potential for recovery of 60 to 96 million barrels of oil would be foregone.

The present leasing Category 1 would not change in the area that would not be designated wilderness. There are approximately 25,940 acres presently under lease conversion application in this area, and future leasing could occur. Under this alternative, it is assumed that there are 900 million to 1.14 billion barrels of recoverable oil with potential for exploration and development in this area. It is estimated that up to 15,460 acres of surface disturbance could occur from tar sand exploration and development activities on this portion of the WSA.

Locatable Minerals

Approximately 700 acres of mining claims occur within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines with wilderness considerations. After designation all lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

It cannot be determined how much of the potential in-place resource (less than 50,000 tons of copper and 500 to 1,000 tons of uranium oxide) is within the area that would be designated wilderness under this alternative. Therefore, it is assumed that the amount of potential resource recovery lost would be in direct proportion to the size of the area designated. The worst-case impact for minerals would occur if none of the potentially locatable mineral resource is within a valid claim at the time of designation. In this case, the potential for exploration and development of up to 21,000 tons of copper and 200 to 400 tons of uranium oxide could be foregone in the area that would be designated wilderness.

Approximately 5,796 acres of mining claims occur within the area that would not be designated wilderness. Development work, extraction, and patenting could continue to occur on these claims.

It is estimated that up to 23 acres could be disturbed due to exploration in the area that would not be designated as wilderness. Under this alternative, it is assumed that exploration and development of a potential resource of up to 29,000 tons of copper and 300 to 600 tons of uranium oxide could occur in this portion of the WSA.

Because production of these metals is not currently occurring within the WSA and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that development would occur even without partial wilderness designation. Therefore, it is concluded that this alternative would not result in any significant loss of economically recoverable locatable minerals.

WILDLIFE

Wildlife could benefit from this alternative due to the preservation of solitude and naturalness on 27,000 acres that would be designated wilderness. Although future water developments on the designated area would not be allowed unless compatible with wilderness values, none are currently planned nor is there an identified potential for water development in the designated area. Therefore, restraints for wilderness protection would not conflict with habitat improvements in the area.

About 17 acres of surface disturbance could occur from mineral exploration in the area that would be designated. This could disrupt some wildlife populations and result in mobile species leaving the disturbed area for the duration of these activities. Less mobile species would either perish or coexist with these disturbances at smaller and less viable population levels. Less than 1 percent of substantial value yearlong desert bighorn sheep habitat and limited value mule deer habitat in the WSA would be disturbed. Therefore, this would not adversely affect the distribution and abundance of these animals. Peregrine falcon, the only endangered species that may occasionally inhabit the area, bald eagle, an endangered species that may visit the area during migration, and sensitive species, such as Bell's vireo and golden eagle, would also avoid the disturbed areas. However, overall, none of these species would be adversely affected because the disturbed area would be small and appropriate mitigative measures would be taken.

In the area that would not be designated, 15,576 acres of possible surface disturbance from mineral and energy exploration and development would disrupt wildlife. Wildlife species would be

dispersed from the disturbed area for the duration of these activities. About 21 percent of the substantial value yearlong desert bighorn sheep range and limited value mule deer range in the WSA would be disturbed. Desert bighorn sheep and mule deer would avoid the disturbed area. Less mobile wildlife would either perish or coexist at smaller and less viable population levels. Peregrine falcon, bald eagle, and some sensitive species, such as Bell's vireo and golden eagle, would avoid the disturbed area. Following mineral development and production, wildlife could benefit from development of water sources (none are currently planned) that could be completed without consideration of wilderness values and from improved forage after rehabilitation.

FOREST RESOURCES

Other than on the Block (North and South Blocks), there are few trees (scattered pinyon and juniper) in the WSA and no present or anticipated harvest of these trees other than occasional use by recreationists. Therefore, there would be little change in utilization of the forest resource.

LIVESTOCK

In the area that would be designated wilderness, livestock grazing would continue as authorized in the Henry Mountain MFP (currently 74 AUMs). Use would not occur in the Little Rockies Allotment, which is not currently in use (unallocated) and does not produce livestock forage within the WSA. There are no existing livestock developments in this area nor are any proposed. Surface disturbance of up to 17 acres in this area would not affect livestock use of the area.

In the area that would not be designated, grazing use (currently 1,026 AUMs including 13 unallocated AUMs) would also continue as authorized in the MFP. Surface disturbance of approximately 15,593 acres due to mineral and energy exploration and development could reduce available forage for cattle. If development of this magnitude occurred, as much as 14 percent of the Sewing Machine Allotment's livestock forage would be disturbed and/or destroyed, thus reducing the available AUMs. However, following reclamation, additional forage could be available to livestock. All existing and proposed livestock developments are in this portion of the WSA, and they could be maintained and developed without concern for wilderness values.

VISUAL RESOURCES

In the 27,000-acre portion that would be designated wilderness, the colorful canyon scenery of the North Wash drainage and the Dirty Devil River

drainage would be protected because of VRM Class I management, ORV closure, and closure to future mineral leasing and location. As much as 17 acres of surface disturbance from mineral exploration of existing claims could result in a localized degradation of visual values, but no significant impact in this portion as a whole would be expected.

In the 46,100-acre portion that would not be designated, 5,700 acres would continue to be managed under VRM Class II standards and 40,400 acres as VRM Class III. Management class objectives could not be met on disturbed acres: 15,460 acres from tar sand development, 93 acres from conventional oil and gas exploration, and 23 acres from locatable mineral exploration. Disturbances would create long-term contrasts; however, with rehabilitation, VRM objectives could probably eventually be met.

CULTURAL RESOURCES

The protection afforded by wilderness management would outweigh any potential vandalism problems due to increased recreation use, and the overall impact would be positive. As much as 17 acres could be disturbed by mineral exploration and development in the area that would be designated wilderness; however, inventories for cultural resources conducted prior to these activities would identify those sites involved and would mitigate any adverse impact to them. Inadvertent loss or damage to cultural resources could occur; however, it is expected to be minimal in the designated portion.

Inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance in the 46,100-acre nondesignated area. However, the area would receive as much as 15,576 acres of surface disturbance and, therefore, the potential for inadvertent loss of cultural values would be much greater in this portion of the WSA.

RECREATION

Impacts on recreational values and opportunities for the 27,000-acre area that would be designated would be as described in the All Wilderness Alternative. Outstanding primitive recreational activities would be recognized, managed, and preserved. The wild and scenic qualities of 4 miles of the Dirty Devil River would receive additional protection as compared to the No Action Alternative. The BLM wilderness would provide access to the adjacent NPS-proposed wilderness. Mineral-related surface disturbance on up to 17 acres in the area that would be designated could cause localized impairment of recreation values.

In the area that would not be designated (46,100 acres), little change in recreational use is expected due to the limited recreational values present in that portion. Mineral and energy exploration and development activities on up to 15,576 acres would degrade or destroy primitive recreational values in the affected areas and possibly in the area as a whole in that portion of the WSA. Vehicular use would be allowed on the 23.6 miles of vehicular ways and roads in the nondesignated portion of the WSA and new access could be developed. This would maintain and possibly improve access into the area that could be used for nonprimitive recreational purposes.

WILDERNESS VALUES

Impacts in the 27,000-acre portion that would be designated wilderness would be the same as under the All Wilderness Alternative: size, naturalness (27,000 acres), and outstanding opportunities for solitude (25,600 acres) and primitive recreation (27,000 acres) would be protected. This area includes the highest quality scenic areas in the WSA (which is one of the special features). It is not known to what extent cultural values (also a special feature) are included. Although recreational use could increase, use relative to the size of this area would be low and no significant impacts on solitude or primitive recreation values would be expected. There could be some loss of wilderness values due to allowable surface disturbance from localized mineral exploration on 17 acres within the designated portion. Additionally, sights, sounds, and emissions of activities in the 46,100-acre area that would not be designated could result in loss of solitude and primitive recreation values in the designated portion of the WSA.

In the 46,100-acre area that would not be designated, there could be up to 15,576 acres of surface disturbance from mineral and energy exploration and development. These activities would eliminate naturalness (37,309 acres meet the standard) and opportunities for solitude and primitive recreation in this area. Opportunities for solitude and primitive recreation are less than outstanding in this portion of the WSA, except for 5,700 acres including The Block, which have outstanding opportunities for primitive recreation. Additionally, sights, sounds, and emissions of mineral and energy activities could impair solitude and primitive recreation values in the Dirty Devil, Horse-shoe Canyon, and French Spring-Happy Canyon, in the NPS-proposed wilderness in the Glen Canyon NRA, and possibly in Canyonlands National Park.

LAND USE PLANS AND CONTROLS

Wilderness designation would not be consistent with the *Garfield County Master Plan*, which favors multiple uses other than wilderness for the Fiddler Butte WSA. This Partial Wilderness Alternative would be consistent with the wilderness proposal in the Glen Canyon NRA. Because State land within the designated area would be exchanged, wilderness designation would not conflict with the State of Utah policy to maximize economic returns.

The BLM Henry Mountain MFP does not provide for wilderness. A decision by Congress to designate 27,000 acres of the WSA as wilderness would be an amendment to the MFP.

SOCIOECONOMICS

Overall, with partial designation there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10), as well as loss of potential increases in population, income, and Federal revenues that could occur under the No Action Alternative.

The socioeconomic benefits and drawbacks of tar sand production from the 2,500 acres of Tar Sand Triangle STSA (300 acres are under lease conversion application) within the designated portion of the WSA that could occur under the No Action Alternative would not occur under partial designation. However, tar sand production from the 38,750 acres of the Tar Sand Triangle STSA in the nondesignated portion (25,940 acres are under lease conversion application) as well as the remainder of the Tar Sand Triangle STSA could occur and could result in major socioeconomic impacts in Garfield, Wayne, and possibly Emery Counties. The size and duration of tar sand projects in the region would be slightly reduced. Precluding future exploration and development of locatable minerals would not alter existing

economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Without tar sand development, livestock use and ranchers' income would continue as at present with a potential of up to 1,100 AUMs of use, \$22,000 of livestock sales, including \$5,500 of ranchers' return to labor and investment. If tar sand is developed in the nondesignated portion of the WSA, livestock forage and related sales and returns could be reduced for several years; however, there is a potential for increased grazing and related sales and returns following reclamation of disturbed areas.

Increased public awareness of the area resulting from designation could increase recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide) and would be insignificant to both the local economy and individual businesses.

The loss of 20,680 acres now leased would cause an eventual loss of up to \$62,040 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$18,960 annually in Federal revenues from the 6,320 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new oil and gas or tar sand production could also be foregone.

Without tar sand development, Federal grazing fees of \$1,540 per year would continue. With tar sand development on the nondesignated portion livestock forage use and related Federal grazing fees could initially be reduced but could be restored over time.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. One commercial outfitter occasionally uses the WSA.

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Mt. Pennell
WSA





MT. PENNELL WSA

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MT. PENNELL WSA

(UT-050-248)

INTRODUCTION

General Description of the Area

The Mt. Pennell Wilderness Study Area (WSA) consists of 74,300 acres of public land in eastern Garfield County. The Henry Mountains structural basin is one of the major structural depressions of the Colorado Plateau. Mt. Pennell forms a high structural dome 6 to 8 miles in diameter, with several thousand feet of structural relief that interrupts the otherwise gentle east flank of the structural basin. Mt. Pennell is the second highest peak in the Henry Mountains. There are several deep canyons carved into the side of the mountain, including Dark and Scratch Canyons.

Annual precipitation varies from about 7 inches to 23 inches at the top of Mt. Pennell which is 11,371 feet above sea level. Temperatures range from -20 degrees to over 110 degrees Fahrenheit (F).

Most of the WSA at the lower elevations is characterized by pinyon-juniper vegetation and associated grasses. Above 7,000 feet, oak, ponderosa pine, subalpine fir, spruce, Douglas fir, and aspen are found. Wildlife found in the WSA includes the Henry Mountain bison herd, mule deer, rabbits, squirrels, cougar, coyotes, and several species of birds.

There are known deposits of gold, copper, and silver that are currently subeconomical to develop due to their limited extent and quality. Approximately 12.3 million tons of strippable coal on 1,270 acres are found on Cave Flat (2 to 4 percent of the Henry Mountain Coal Field). However, BLM has found the entire acreage to be unsuitable for surface mining because of the presence of crucial-critical bison habitat.

The WSA is approximately 16 miles wide at its widest point (east to west) and 17 miles long at its longest. It is located about 25 miles south of Hanksville in south-eastern Utah.

The Mt. Pennell WSA identified in the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980) decision was 27,300 acres. As a result of an appeal to the Interior Board of Land Appeals (IBLA), BLM was instructed by IBLA on April 12, 1985 to add an additional 47,000 acres to the WSA (IBLA Case 84-182). This additional acreage has been added, increasing the size of the Mt. Pennell WSA to 74,300 acres.

Specific Issues Identified in Scoping

General issues pertaining to more than the Mt. Pennell WSA are discussed in Volume I. One issue raised in public scoping meetings (USDI, BLM, 1984c) and specific to Mt. Pennell WSA is responded to below:

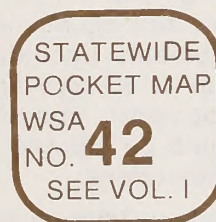
1. *Comment:* The occurrence of the sensitive plant species *Astragalus henrimontanensis* in or near this WSA should be considered in the decisionmaking process.

Response: *Astragalus henrimontanensis* was a candidate species under review by the U.S. Fish and Wildlife Service (FWS) for threatened or endangered status. During the review it was found to be relatively abundant and has been dropped from further review. However, *Sclerocactus wrightiae*, a listed endangered plant is known to occur in the WSA. *Eriogonum cronquistii* and *Pediocactus winkleri*, both candidate species under status review by the FWS could occur within the WSA. This information is included in the description of the Affected Environment and is analyzed in this Environmental Impact Statement (EIS).

DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

During scoping, a general suggestion was received for a partial alternative that would eliminate resource conflicts. After review, it appears that it is not possible to delineate a partial alternative completely avoiding resource conflicts; therefore, this suggestion was eliminated from detailed study. The Partial Wilderness Alternative included in this document allows analysis of designation of the area with the most outstanding wilderness characteristics.



Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (74,300 acres); and (3) Partial Wilderness (25,800 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 74,300-acre Mt. Pennell WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The State land within the WSA (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase. Refer to Volume I for further information on State in-holdings.

The following are specific actions that would take place under this alternative:

- All 74,300 acres would remain open to mineral location, leasing, and sale. Development work, extraction, and patenting would be allowed on existing mining claims (2,328 acres) and future mining claims. Development would be regulated by unnecessary or undue degradation regulations (43 Code of Federal Regulations [CFR] 3809) without concern for wilderness values. Existing and future oil and gas leases could be developed under leasing Category 1 (standard stipulations) on 49,400 acres and Category 2 (standard and special stipulations) on 24,900 acres. Surface mining of coal deposits in the Cave Flat area would be prohibited to protect crucial-critical bison habitat.
- The present domestic livestock grazing use in the WSA would continue as authorized in the MFP (currently 3,282 Animal Unit Months [AUMs]). Existing developments (including a corral, seven reservoirs, 4 miles of fence, and 6 miles of pipeline) could be used and maintained, and new range developments (including an identified potential 1,183-acre chaining, two spring developments, and one livestock reservoir) would be allowed without wilderness considerations.
- Developments for wildlife, water resources, etc. could be allowed if in conformance with the MFP.

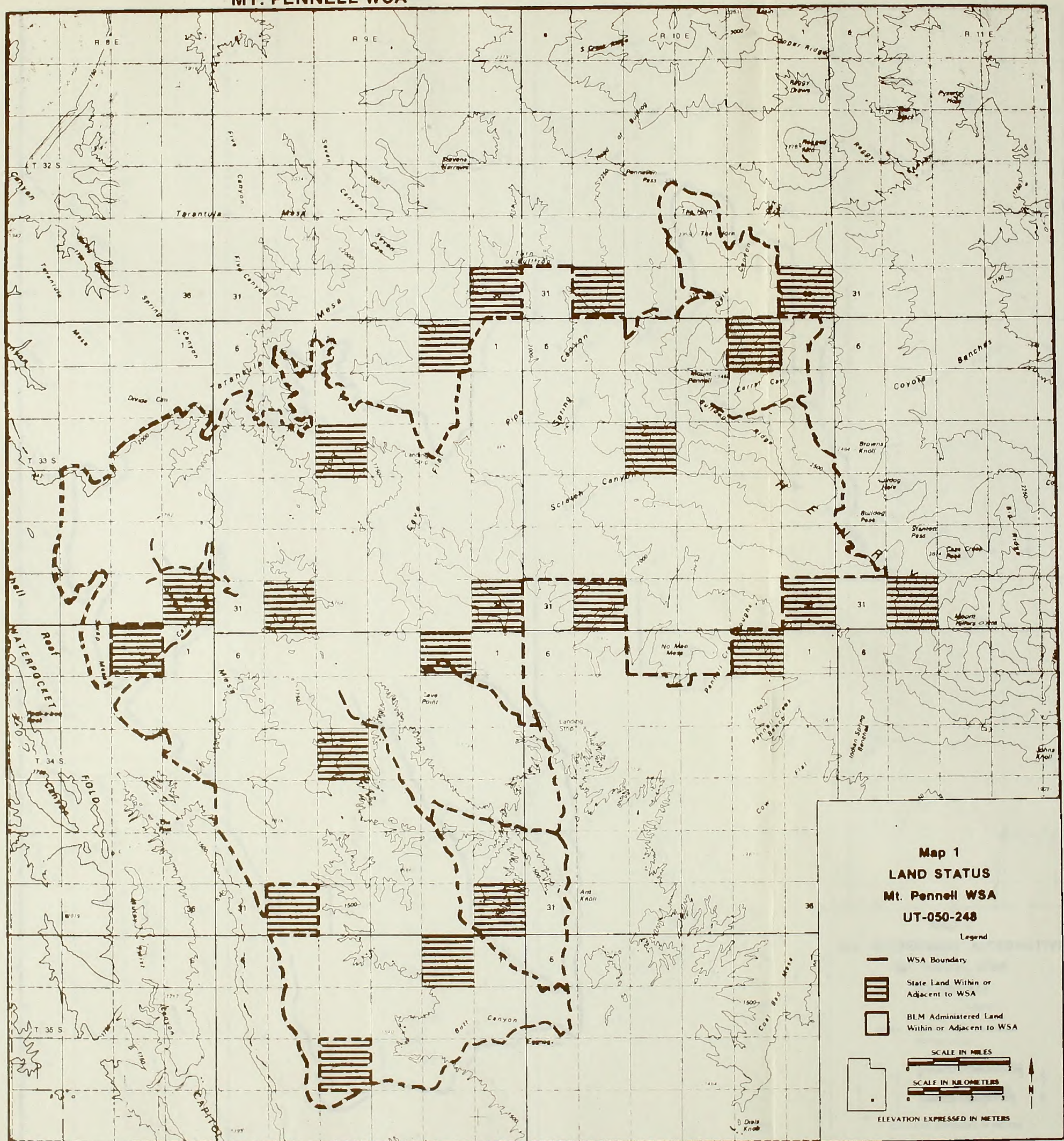
- The entire WSA acreage, including about 17 miles of vehicular ways and 34.1 miles of road, would be open to off-road vehicle (ORV) use, and new access routes for development could be allowed.
- The entire 74,300-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (23,885 acres), Class III (20,951 acres), and Class IV (29,464 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

Under this alternative, all 74,300 acres of the Mt. Pennell WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). It would be managed in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of six sections of State land (71 acres), one inside and five outside WSA boundaries (refer to Map 1), would be likely and could be authorized by purchase or exchange. Five additional State sections adjacent to the WSA would not likely be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands, and no specific analysis is given here. (Refer to Volume for further information on State in-holdings.) The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

The following are specific actions that would be taken under this alternative:

MT. PENNELL WSA



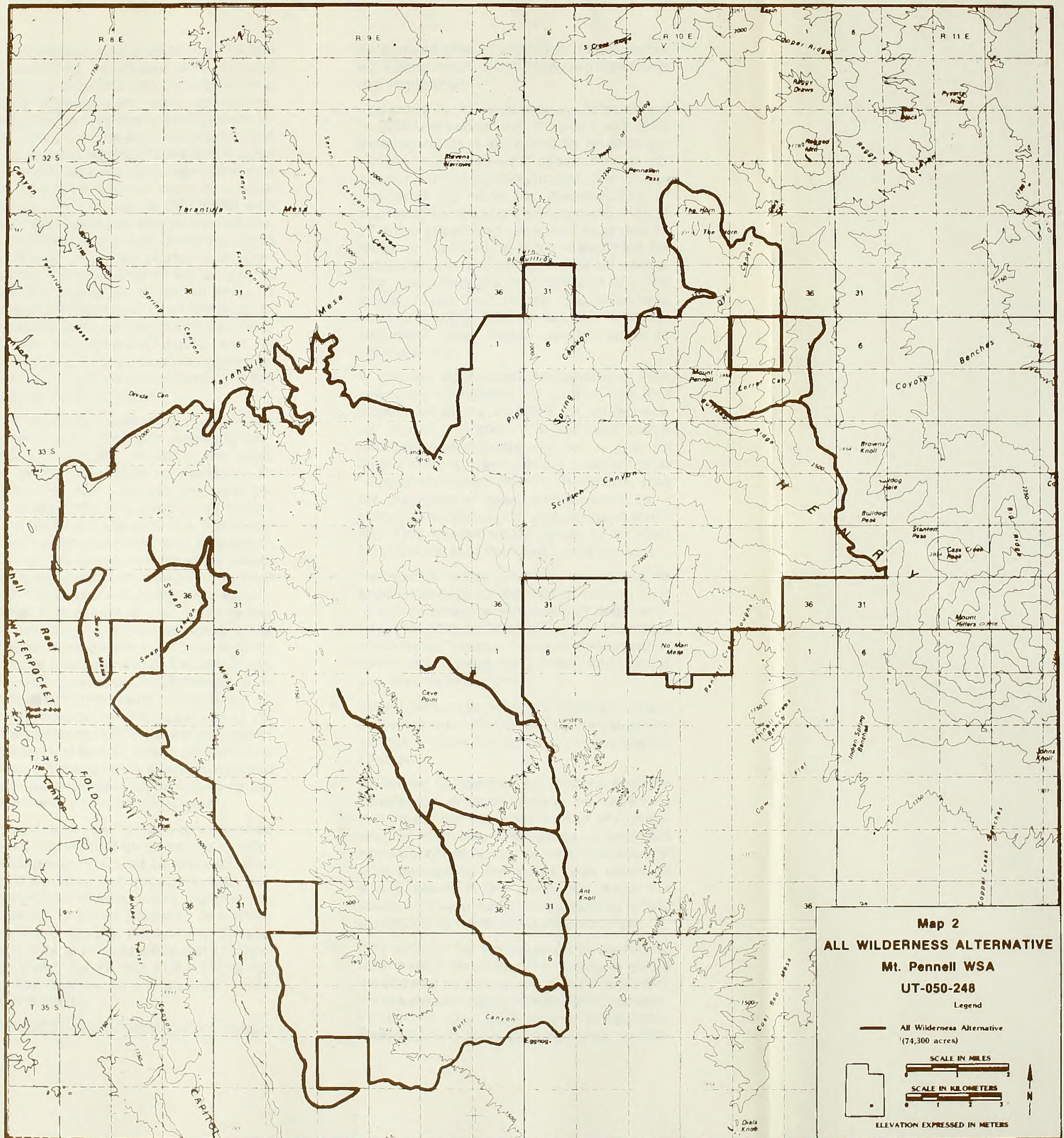
Map 1
LAND STATUS
Mt. Pennell WSA
UT-050-248

Legend

- WSA Boundary
- State Land Within or Adjacent to WSA
- BLM Administered Land Within or Adjacent to WSA



MT. PENNELL WSA



- After wilderness designation, all 74,300 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 2,328 acres of existing mining claims that may be determined to be valid. Development would be regulated by unnecessary or undue degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Existing oil and gas leases, involving about 49,560 acres, would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown prior to wilderness designation. Coal deposits in the Cave Flat area are not currently under lease and development would not be allowed under this alternative. Development of sand and gravel resources in the area would not be allowed.
- Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The 3,282 AUMs in the WSA would remain available to livestock as presently allotted. The use and maintenance of rangeland improvements (including one corral, 4 miles of fence, 6 miles of pipeline, seven reservoirs, and two wells) existing at the time of designation would continue in the same manner as in the past based on practical necessity and reasonableness. It is assumed that, after designation, new rangeland improvements would be allowed if necessary for the protection or effective management of the rangeland and/or wilderness resource, if these can be carried out consistent with wilderness protection standards (refer to Appendix 1). An identified potential 1,183-acre chaining and one livestock reservoir would probably not be allowed because they may not meet the protection standards. Two proposed spring developments could be developed.
- New water resource facilities or watershed activities (not related to rangeland or wildlife management) would be allowed after designation only if compatible with wilderness values, needed to correct an imminent hazard to life or property, or authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No watershed treatments are planned in the Mt. Pennell WSA.
- Wildlife transplants or developments would be allowed after designation if compatible with wilderness values. None are now existing or planned.
- The entire 74,300-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR provisions; or (2) occasional and short-term vehicular access approved by BLM for maintenance of approved rangeland developments. About 17 miles of existing vehicular ways and 11 miles of road would not be available for vehicular use except as indicated above. The approximately 28.9 miles of dirt and gravel roads that border the WSA and approximately 23.1 miles of "cherry-stemmed" road would remain open to vehicular use.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 74,300-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads that are adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- Visual resources would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be limited to hand and aerial methods.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be con-

ducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.

- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon a clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, 25,800 acres of the Mt. Pennell WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA with the most outstanding wilderness characteristics. The acreage analyzed as wilderness includes the mountainous portions of the WSA. About 48,500 acres in the western portions of the WSA, which consist of benchlands, would be managed in accordance with the Henry Mountain MFP as described for the No Action Alternative. The 25,800-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative. Upon designation, acquisition of one State section within the WSA and five outside WSA boundaries would be likely. Five other State sections adjacent to the designated portion of the WSA probably would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only. (Refer to Volume I for further information regarding State in-holdings.)

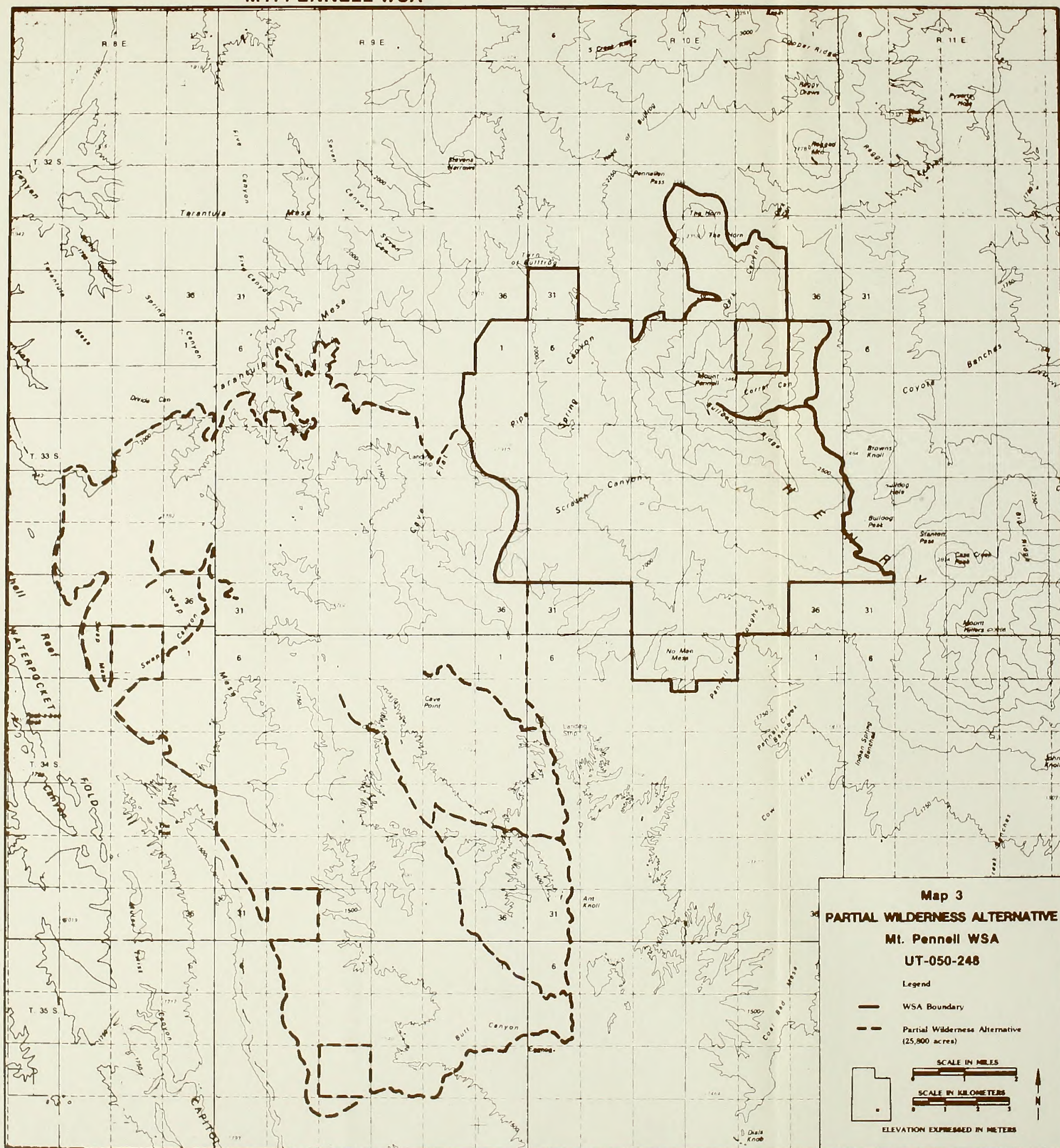
A summary of specific actions under this alternative follows.

- The 25,800-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. However, development work, extraction, and pat-

enting would be allowed to continue on 2,328 acres of existing mining claims, provided that they are valid. Existing oil and gas leases covering 18,560 acres would be phased out upon expiration unless a find in commercial quantities is shown. The 48,500-acre area not designated wilderness would be open to mineral location, leasing, and sale. There are no existing mining claims on the 48,500 acres. Approximately 31,000 acres of existing oil and gas leases could be developed under Category 1 stipulations on 29,960 acres and Category 2 on 6,240 acres. The area not designated includes 1,270 acres of surface minable coal in the Cave Flat area that would continue to be unsuitable for surface mining. The 48,500 acres not designated wilderness would be managed as oil and gas leasing Category 1 on 42,600 acres and Category 2 (standard and special stipulations) on 6,240 acres.

- Domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The 891 AUMs in the area designated wilderness would remain available to livestock as presently allotted. In the designated portion, the existing corral, 2 miles of fence, and reservoir could continue to be used and maintained in the same manner as in the past based on practical necessity and reasonableness. Rangeland developments would be allowed after designation only if necessary for the protection and effective management of the rangeland and/or wilderness resources, if wilderness protection criteria are met. About 1,153 acres of the 1,183-acre identified potential chaining would be located within the designated area and would not be allowed. The remaining 30 acres of the potential chaining are in the 48,500-acre nonwilderness area and could be implemented without consideration of wilderness values. Because the acreage of allowable chaining would be small, chaining is unlikely under this alternative. In the 48,500-acre nonwilderness area, grazing use of 2,391 AUMs would also continue as authorized in the MFP.
- In the 25,800-acre wilderness new water resource facilities or watershed activities (other than rangeland developments) would be allowed only if compatible with wilderness, needed to correct imminent hazards to life and property, or if authorized by the President pursuant to Section 4(d)(4)(1) of

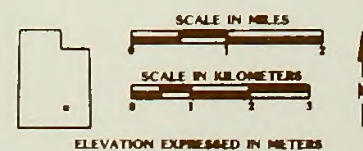
MT. PENNELL WSA



Map 3
PARTIAL WILDERNESS ALTERNATIVE
Mt. Pennell WSA
UT-050-248

Legend

- WSA Boundary
- - - Partial Wilderness Alternative (25,800 acres)



the *Wilderness Act*. In the 48,500-acre nonwilderness area, water resource developments would be allowed if in accordance with the MFP. Two spring developments and one livestock reservoir are planned in this area.

- In the 25,800-acre wilderness, wildlife transplants or habitat improvements would be allowed only if compatible with wilderness values. In the 48,500-acre nonwilderness, wildlife transplants or improvements would be allowed if in accordance with the MFP without consideration for wilderness values.
- The 25,800-acre wilderness area would be closed to ORV use. The 48,500-acre remainder of the unit would remain open to vehicular travel. About 3 miles of existing vehicular ways within the wilderness portion would no longer be available for vehicular use except for purposes identified under the All Wilderness Alternative. Five miles of existing road in the designated portion would be "cherry-stemmed" and would remain open to vehicular use.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 25,800-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface, or the edge of the right-of-way for State Highway 95, whichever is greater.
- Harvest of forest products in the wilderness area would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. The 48,500 acres not designated wilderness would be open to woodland harvest.
- Visual resources in the wilderness would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. The 48,500 acres not designated as wilderness would be managed as Classes II and IV as currently set forth in the Henry Mountain MFP.
- Within the 25,800-acre wilderness area, measures to control fire, insects, noxious weeds, or disease would be taken only in instances that threaten human life, prop-

erty, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. It is assumed that firefighting would be limited to hand or aerial means. In the 48,500 acres not designated, measures of control would be taken without wilderness considerations.

- In the 48,500-acre area, any activity for the purpose of gathering information about natural resources would be allowed by permit. In the 25,800-acre wilderness area, such activity would be allowed by permit if compatible with wilderness preservation. It would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- In the 48,500-acre area hunting would be allowed subject to applicable State and Federal laws and regulations. In the 25,800-acre wilderness, use would be allowed subject to applicable laws and regulations, but would be limited to nonmotorized means.
- In the 48,500-acre area, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the 25,800-acre wilderness, control of predators would be allowed for the same purposes, but only under conditions that would ensure minimum disturbance to wilderness values. Poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 summarizes and compares the main environmental impacts that would result from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed to present a comparison of the alternatives.

AFFECTED ENVIRONMENT

Air Quality

This WSA is located in a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act as amended; however,

MT. PENNELL WSA

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
MT. PENNELL WSA

Resource	Alternatives		
	No Action	All Wilderness (74,300 Acres)	Partial Wilderness Designation (25,800 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 12.3 million tons of coal, 500 tons of uranium oxide, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper.	Oil, gas, and coal likely would not be recovered. Assuming a worst-case analysis, the recovery of locatable minerals would also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.	Although likelihood is low, up to 0.2 million barrels of oil and 1 billion cubic feet of natural gas could be recovered.
Wildlife	Less than 0.3 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat. Land treatments on 1,183 acres (less than 2 percent of the WSA) would increase forage for bison and would help reduce competition for forage on crucial deer summer range; deer and bison numbers could increase slightly.	Wildlife would benefit from solitude. Populations of deer and bison would remain static because of limited summer range, as the land treatment would not be allowed.	Wildlife in the designated area would benefit from solitude. Less than 0.1 percent of the nondesignated portion could be disturbed by mineral and energy exploration and development, which could adversely affect wildlife habitat. Populations of deer and bison would remain static because of limited summer range.
Livestock	Grazing of 3282 AUMs and maintenance of any existing developments would continue. Proposed new developments, including two spring developments, one livestock reservoir and land treatments on 1,183 acres, could be implemented to produce 92 livestock AUMs.	Grazing of 3282 AUMs and maintenance of existing developments would continue. Little effect on grazing management is expected. The proposed chaining and livestock reservoir would not be allowed. New developments proposed in the future might not be allowed.	Effects would be about the same as for the All Wilderness Alternative. Only 30 acres of the proposed land treatment would be in the nondesignated area and treatment would probably not be done. The proposed livestock reservoir would be allowed.
Visual Resources	The quality of visual resources could be impaired on up to 1,393 acres.	Visual quality could be impaired on up to 50 acres.	Visual quality could be impaired on up to 154 acres (including 50 acres in the designated portion). All of the Class A scenery would be in the designated portion and would be protected by the reduced potential for disturbance.
Recreation	ORV use would continue on 17 miles of ways and 34.1 miles of roads at current low levels. Overall recreational use could increase from the present 2,580 visitor days per year to 3,884 over the next 20 years. Up to 1,393 acres of mineral-related disturbance and land treatments could reduce the quality of primitive recreation.	The WSA, including 17 miles of ways and 11 miles of roads, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation. 23.1 miles of roads would be "cherry-stemmed" and would remain open to vehicle use.	ORV use would be prohibited on 35 percent of the WSA including 3 miles of vehicular ways. ORV recreational use could continue on 14 miles of ways and 29.1 miles of roads in the undesignated portion. Five miles of roads in the designated portion would be "cherry-stemmed" and would remain open to vehicle use.

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
MT. PENNELL WSA

Resource	Alternatives		
	No Action	All Wilderness (74,300 Acres)	Partial Wilderness Designation (25,800 Acres) (Proposed Action)
Wilderness Values	Wilderness values could be lost on up to 1,393 acres (2 percent of the WSA).	Wilderness values would be protected, except on up to 50 acres (less than 0.1 percent of the WSA) which may be disturbed by development of valid mineral rights.	Wilderness values would be protected, except on 50 acres which could be disturbed by development of valid existing rights. Additional impairment could be expected on less than 1 percent of the 48,500 acres not designated. Overall, wilderness values could be lost on 0.1 percent of the WSA. All of the area that meets the standards for outstanding opportunities for solitude and primitive recreation and 36 percent of the area that meets the standards for naturalness would be in the designated area and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be consistent with the <i>Garfield County Master Plan</i> , State of Utah plans and policies, and the current BLM Henry Mountain MFP.	This alternative would not be consistent with Garfield County's concept of multiple use. It would be consistent with State policy if lands were exchanged. Designation would constitute amendment of the BLM Henry Mountain MFP.	Partial designation would be the same as the All Wilderness Alternative, except that the portion not designated would be consistent with Garfield County's plans.
Socio-economics	Annual local sales of less than \$87,518 and Federal revenues of up to \$153,275 would continue. A potential \$1,840 increase in livestock sales could result from increases in livestock forage allocations. An additional \$74,349 per year in Federal revenue could be derived from leasing of presently unleased areas and increases in livestock forage allocations.	Annual local sales of less than \$87,518 and Federal revenues of up to \$4,595 would continue, but local sales of \$1,840 and Federal revenues of up to \$223,029 from mineral leasing and potential livestock forage allocations would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.	The effects of this alternative would be similar to those of the All Wilderness Alternative. However, Federal revenues could be reduced by only \$82,029 as compared to \$223,029 with the All Wilderness Alternative.

it is affected little from sources of pollution. Capitol Reef National Park along the west boundary of the WSA is a Class I area. Visibility is generally excellent. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979).

Geology

The Mt. Pennell WSA is located in the Colorado Plateau Physiographic Province. In general, this province is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

The topography of the WSA is characterized by sharp, ragged mountain peaks with steep slopes broken by surrounding narrow canyons. The mountain rises approximately 5,000 feet above the surrounding plateau, reaching an elevation of 11,371 feet. Mt. Pennell is the second highest peak in the Henry Mountains.

The Henry Mountains exhibit geological characteristics found in two other local mountain ranges, the Abajo and LaSal, as well as four other ranges in the Colorado Plateau. All these ranges are characterized by large volcanic formations which gradually pushed through many layers of sedimentary rocks, deforming them in the process. Each of the ranges is essentially isolated and surrounded by low-lying deserts. The Henry Mountains are generally considered by geologists to be a prime example for the study of this phenomenon. Because of these geologic features, two of the peaks in the Henry Mountains (Mt. Holmes and Mt. Ellsworth) were designated a National Natural Landmark in 1975.

Soils

The general soils of this WSA include high mountain stony loams with no existing accelerated erosion problems and gravelly foothill soils with some critical erosion condition. Table 2 summarizes soil erosion condition for the WSA. Erosion condition was determined by soil surface factors (terms are defined in the Glossary).

Vegetation

Most of the WSA at the lower elevations is characterized by pinyon-juniper vegetation and associated grasses. Above 7,000 feet on the mountain proper, oak, pine, spruce, subalpine fir, Douglas fir, and aspen are found. The combination of plant communities presents a complete

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	8,339	11	22,515
Moderate	1.3	41,253	55	53,628
Slight	0.6	17,512	24	10,507
Stable	0.3	5,796	8	1,739
Unclassified		1,400	2	Unknown
Total		74,300	100	Exceeds 88,389

Sources: USDI, BLM, 1982c; Leifeste, 1978.

elevational gradient for the region. Existing vegetation types are summarized in Table 3. *Sclerocactus wrightiae*, an endangered plant species is known to exist in the WSA. *Eriogonum cronquistii*, and *Pediocactus winkleri*, candidate species under status review by the FWS, could possibly occur within the WSA.

TABLE 3
Existing Vegetation Types

Existing Vegetation Types	Acres	Percent of WSA
Pinyon-Juniper	24,563	33
Shadscale	26,857	36
Oakbrush	2,529	3
Rock, badland	4,782	7
Aspen, fir	1,293	2
Assorted grasses and shrubs	8,128	11
Blackbrush, Ephedra	6,110	8
Riparian	38	Less than 1

Source: USDI, BLM, 1982c.

The Mt. Pennell WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the WSA are listed on Table 4. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

This area is the headwaters for numerous small streams, such as Coyote Creek. Summer thunderstorms are frequent and can produce flash flooding. There are two wells, 16 springs, seven live-stock reservoirs, and 10.5 miles of perennial streams in the WSA.

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Saltbush-greasewood	20,000	27
Juniper-pinyon woodland	46,000	62
Arizona pine forest	6,300	8
Spruce-fir-Douglas fir	2,000	3

Source: USDI, Geological Survey, 1978.

The water quality is not known on all waters. It is considered good on Dark Canyon, Straight Creek, Gibbons, and Hancock Spring. However water treatment is advisable. Bullfrog Creek water is not chemically acceptable. Refer to Table 5 for additional water quality data.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in the WSA is low to moderate, due to a marginally favorable

geologic environment. An overall importance rating (OIR) of 2+ was assigned to the Mt. Pennell WSA by SAI (1982). The OIR is given on a scale of 1 to 4 where 4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

The SAI rating is given for 75 to 100 percent of the Mt. Pennell WSA. Seven of the eight resources were assigned favorabilities of f2 or less, with one, coal being f4. The energy and mineral resource rating summary is given in Table 6.

TABLE 5
Water Resource Quality Data

Perennial Streams	BLM WUC ¹ Number	Flow in CFS ² (Claimed by BLM)		Length (miles)	Water Quality- Chemical Parameters
Bullfrog Creek	97-817-935	4.00		0.25	Problem
Dark Canyon Creek	95-3297		(0.06)	3.0	Acceptable
Browns Creek	97-3280	0.16	(0.045)	0.25	No Data
Mud Creek	97-236-237	0.13		4.5	No Data
Straight Creek	97-3283	1.96	(0.44)	2.5	Acceptable
Springs					
Browns Hole Spring	95-3282	0.08	(0.02)		No Data
Horn Spring	95-3300		(0.00025)		No Data
Gibbons Spring	95-3296		(0.05)		Acceptable
Hancock Spring	95-3298		(0.015)		Acceptable
Dark Canyon Spring	95-3294	0.067	(0.07)		No Data
Willow Spring	95-3299	0.013	(0.009)		No Data
Pine Spring	97-1646	0.018	(0.13)		No Data
Talus Spring	97-1644		(0.044)		No Data
Sidehill Spring	97-1872		(0.007)		No Data
Spring in Slot	97-826	No Flow Data			No Data
Dry Spring	97-1658		(0.005)		No Data

Source: USDI, BLM, 1982c.

¹WUC-water user claim

²CFS-cubic feet per second

TABLE 6
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas.
Uranium	f2	c1	Less than 500 tons
Coal	f4	c4	over 12.3 million tons
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None
Gold	f2	c4	Less than 25 tons
Silver	f2	c4	Less than 500 tons
Copper	f2	c4	Less than 50,000 tons

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. The WSA contains deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would be present in the WSA in only small amounts.

There is no active drilling or production of oil and gas or other minerals in the WSA.

LEASABLE MINERALS

The only known occurrence of a leasable mineral in the WSA is coal found on Cave Flat. This area (1,270 acres) contains approximately 2 to 4 percent of the Henry Mountain Coal Field and has roughly 8.2 million tons of recoverable coal. This coal is currently unleased and is designated as unsuitable for leasing because of potential conflicts with crucial-critical bison range.

Oil and Gas

New information now indicates less favorable conditions for oil and gas than were originally thought to exist. Oil and gas potential is rated as low with less than 10 million barrels of oil or less than 60 billion cubic feet of natural gas in-place.

Of these amounts, less than 3 million barrels of oil or 18 billion cubic feet of natural gas would be recoverable (refer to Appendix 6 for recoverability estimates).

Approximately 1,720 acres of the WSA are under pre-FLPMA oil and gas leases and 47,840 acres are under post-FLPMA oil and gas lease. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations that require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA. Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Approximately 24,900 acres of the oil and gas Category 2 land in the WSA have special lease stipulations to protect bison and deer habitat. There are no active exploration or drilling activities taking place.

Coal

Mt. Pennell WSA includes a coal zone locally 15 feet thick composed of several benches of coal and shale. The coal benches range in thickness from 2 to 6 feet; a bench at least 4 feet thick is present in most exposures (Averitt, 1969). Law (1980) ranks the Emery coal from sub-bituminous A to high-volatile C bituminous. Most of the coal seams are discontinuous and show large thickness variations over short distances.

According to Doelling and Graham (1972), seven drill holes have penetrated the Emery coal zone in the north Cave Flat area. Coal seams 6.6 to 9.1 feet thick were encountered. Six of the seven holes encountered the coal at depths less than 100 feet.

A considerable area of potentially strippable coal is present. The Emery coal within the WSA boundaries all lies under less than 100 feet of overburden and, therefore, cannot be mined by underground methods.

Calculations of the actual reserves within the WSA boundary are difficult because of the limited amount of available data. However, using data presented by Doelling and Graham (1972), a rough estimate can be made. By use of their geologic quadrangle maps, which show outcrops and the area underlain by the Emery coal zone, it can be determined that approximately 1,270 acres of the Mt. Pennell WSA contain surface minable seams of coal (over 4 feet thick and less than 100 feet overburden). Doelling and Graham also present actual measured coal sections taken from outcrops. Nine measured sections occur within the WSA boundary, and an average coal thickness of 6 feet can be calculated from this data. Therefore, based on these measurements and assuming a ton of coal is roughly equal to 0.92 cubic yards, it is estimated that 12.3 million tons of surface minable coal lie within the boundary of the WSA.

LOCATABLE MINERALS

One hundred thirteen claims covering 2,328 acres are in the eastern half of the WSA. These claims are primarily for uranium and are in the upper Straight Creek area and near No Man Mesa. Several cabins have been built in upper Straight Creek for use in assessment work.

Gold, Silver, and Copper

There are known deposits of gold, copper, and silver in the WSA on the intrusive stock of Mt. Pennell proper. These deposits have been studied extensively since the 1890s and have remained subeconomical to develop due to their limited extent and quality. These minerals are considered an inferred identified economic reserve.

SALABLE MINERALS

The only known or possible occurrences of salable minerals in the WSA are sand and gravel. Potential markets are very small and have available sources of supply closer than those in this WSA. Sand and gravel is considered a submarginal identified subeconomic reserve.

Wildlife

Animals in the WSA include mule deer, rabbits, squirrels, cougar, and coyotes. Also of interest is the Henry Mountain bison herd which uses portions of the WSA for their summer range and winter range. Chukar partridge and several other

species of birds are found along the water courses. No threatened, endangered, or sensitive wildlife are known to inhabit this WSA. The identified big game ranges in the WSA are listed in Table 7. With overlap of the habitats listed in Table 7, there are about 48,155 acres of crucial-critical deer and/or bison range in the WSA.

TABLE 7
Big Game Ranges

Range	Acres
Limited value bison yearlong	2,000
Crucial-critical bison yearlong	6,500
Crucial-critical bison summer	7,000
Crucial-critical bison winter	32,320
Crucial-critical deer winter	9,750
Crucial-critical deer summer	11,500
High priority deer winter	21,500

Source: USDI, BLM, 1982a.

The current deer population on crucial summer range within the WSA is estimated at 59 animals. The current number of bison using the area is estimated at 200 animals (USDI, BLM, 1983b).

No wildlife management facilities exist in the unit and none are proposed. A potential chaining program has been identified in the *Final Henry Mountain Grazing Management EIS* (USDI, BLM, 1983b) where approximately 1,183 acres in the WSA could be chained with approximately 30 percent of the increase going to the bison herd. This would represent an increase of approximately 40 AUMs for the bison.

Forest Resources

There are stands of aspen, Ponderosa pine, subalpine fir, Douglas fir, spruce, pinyon, and juniper in the WSA. No commercial harvest is taking place due to lack of demand, steep slopes, and low stocking volumes. The current BLM Henry Mountain MFP recommends 27,300 acres of the WSA be closed to commercial timber harvest.

Livestock and Wild Horses/Burros

In the eastern portion of the WSA livestock use is confined to the margins of the area due to rugged terrain.

Approximately 1,183 acres in the WSA have been identified for chaining in the *Final Henry Mountain Grazing Management EIS*. Approximately 70 percent of the forage increase would be allocated for livestock use; the other 30 percent would go to the bison herd. Livestock would gain approximately 92 AUMs with the treatment.

Five allotments are permitted for an estimated 3,282 AUMs in the WSA. This represents about 20 percent of the AUMs of the allotments involved (refer to Table 8). Support facilities include 4 miles of fence, seven reservoirs, two wells, 6 miles of pipeline, and one corral. In addition to the chaining discussed above, there is one reservoir and two spring developments proposed for livestock.

There are no wild horses or burros in the WSA.

TABLE 8
Livestock Grazing Use Data

Allotment	Season of Use	Number of Livestock	Number of Permittees	Number of AUMs in WSA
Pennell	6/1 to 10/31	490 cattle 200 sheep	3	332
Steele Butte	10/1 to 5/31	731 cattle	10	712
Bullfrog	11/1 to 5/31	400 cattle	4	1,221
Sandy No. 2	10/16 to 5/15	318 cattle	1	685
Waterpocket	11/1 to 5/31	427 cattle	4	332

Source: USDI, BLM, 1982c.

Visual Resources

The WSA offers exceptional scenic values. For the most part, the terrain is steep and rugged with several deep canyons. There is a good variety of vegetation and landform which contrasts with the surrounding desert country.

The WSA is visible from a secondary travel route on its north and east sides and from Highway U-276 on the east side. The Visual Resource Evaluation System rated the WSA's visual characteristics as shown in Table 9. Refer to Appendix 7 for an explanation of BLM's VRM system.

TABLE 9
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	23,885	32
Class B	41,155	55
Class C	9,260	13
Management Class		
Class I	0	0
Class II	23,885	32
Class III	20,951	28
Class IV	27,464	40

Source: USDI, BLM, 1982c.

Cultural Resources

There are no historic sites in the WSA, and only 16 prehistoric sites are known. These sites consist of lithic scatters and temporary campsites. None of these sites are listed on the National Register of Historic Places nor are any known sites eligible for listing on the Register. There is a moderate potential for the discovery of additional sites in the WSA, primarily around springs.

Recreation

Fifteen recreational opportunities were evaluated for their quality in the WSA. Fourteen of these opportunities were present in varying degrees. Nine of these activities (backpacking, camping, dayhiking, hunting, nature study, photography, rock climbing, geologic study, and general sight-seeing) are above average to excellent in quality in the eastern portion of the WSA. A summary of selected recreational opportunities follows.

The Horn, a prominent rock outcropping on the north end of the WSA, offers excellent opportunities for technical rock climbing due to easy access and a wide variety of difficulty. This formation may have the best climbing opportunity in central Utah. Commercial outfitters do not use the WSA on a regular basis, but the area is used by organized outdoor groups throughout the summer.

Backpacking and dayhiking opportunities are above average due to good access, large size of the WSA, and a variety of topographic features. Several hiking routes (totaling at least 22 miles) allow one to reach the summit of Mt. Pennell or explore side canyons such as Dark Canyon, Scratch Canyon, Swap Canyon, Muley Creek, and Bullfrog Canyon. Once on top of Mt. Pennell, outstanding scenic vistas of southern Utah and portions of Arizona and Colorado are possible.

Numerous geologic features are available for study, both within and outside the WSA.

Wildlife observation opportunities are above average due to the wide variety of habitat. Bison are frequently seen on the north and west sides of the WSA throughout the summer and fall.

The WSA has no developed recreational facilities. However, there are nine undeveloped camp sites near or on the eastern boundary of the WSA. These camping areas account for an estimated 1,900 visitor days a year including use by big game hunters. Various dispersed recreation activities account for approximately 380 visitor days a year. Rock climbing at The Horn accounts for an

additional 300 visitor days. Portions of the WSA are utilized by deer, bison, and upland game and provide opportunities for hunting. The following visitor days are attributed to hunting in the Henry Mountain Resource Area: bison, 175 days; deer, 342 days; and upland game, 1,106 days. The number of hunter days spent in the WSA is unknown.

Under the Henry Mountain MFP the area would be open to ORV use. ORV use is light and vehicles are used on the 17 miles of way and 34.1 miles of road for hunter access and sightseeing. There is no known ORV play activity in the WSA. Overall visitor use is estimated to be 2,580 visitor days annually within the WSA.

Wilderness Values

SIZE

This WSA is 74,300 acres in size and is approximately 16 miles wide at its widest point (east to west) and 17 miles long at its longest. It is immediately adjacent to the 20,000-acre Mt. Hillers WSA.

NATURALNESS

Most of the eastern portion of the Mt. Pennell WSA is in a completely natural condition. There is a 2-mile way on Cave Flat. There are another 3 miles of ways on the south side of Bulldog Ridge that lead to stock watering troughs. In both cases, the intrusions are substantially unnoticeable. Two other signs of human activity are a 1-mile road to a cabin at Hancock Springs and a 4-mile road to a transmitter station on a high ridge south of Mt. Pennell. In both cases, the roads are "cherry-stemmed" and are not considered to be in the WSA. Several cabins used for mining claim assessment are found at Straight Creek. This intrusion affects naturalness on about 10 acres of the WSA.

In the western portion of the WSA, intrusions include 12 miles of ways and 29.1 miles of roads. Overall, 71,000 acres of the WSA appear natural and 3,300 acres do not meet the naturalness criteria. The configuration roads in the western portion of the WSA create a 3,394-acre island completely surrounded by roads within the WSA boundaries.

SOLITUDE

About 17,800 acres of the WSA meet the outstanding opportunities for solitude standards. The remaining 56,500 acres do not offer outstanding opportunities.

Opportunities for recreationists to find solitude

(i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds. The eastern portion of the Mt. Pennell WSA consists of a large central peak with several prominent ridges. Numerous creeks have carved deep canyons in the side of the mountain on all sides such as Straight Creek, Pipe Creek, Scratch Canyon, and Dark Canyon. These features, plus the steep slopes of the mountain proper, contribute significantly to screening recreationists from each other. Vegetation also contributes to solitude. However, there are variations due to elevation and aspect. For example, the south slopes have scattered pinyon and juniper, aspen, and shrub oak. North and east slopes have spruce, pine, fir, and aspen which in many places are quite dense. Finally, a visitor experiences solitude from the summit of Mt. Pennell; vistas of hundreds of square miles of desert country with no sign of human activity are possible. In the western portion of the WSA opportunities for solitude are less than outstanding in the Muley Creek drainage and in the area south of Swap Mesa and Cave Flat because the terrain is relatively flat and the vegetation is too sparse to provide screening. There is adequate topographic and vegetation screening in the Swap Mesa and Cave Flat areas but the presence of numerous roads and ways detracts from the opportunities for solitude. Overall, these factors considered together indicate that there are outstanding opportunities for solitude on 17,800 acres in the eastern portion of the WSA; opportunities are less than outstanding on 56,500 acres in the western portion of the WSA. There are no sights and sounds outside the WSA that adversely affect solitude on the WSA.

PRIMITIVE AND UNCONFINED RECREATION

About 17,800 acres of the WSA meet the primitive and unconfined recreation standards. The remaining 56,500 acres do not offer outstanding opportunity.

Opportunities for primitive, unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the number of recreational opportunities present, and an evaluation of the quality of these opportunities. This WSA was determined to have above-average opportunities for nine activities including hiking, photography, rock climbing, and geological sightseeing. These activities were discussed in detail in the Recreation section. The overall quality evaluation for the opportunities for primitive, unconfined recreation is high in the WSA east of Bullfrog Creek. On Cave Flat and portions of the WSA west of Cave Flat, recreational opportunities are less than outstanding.

SPECIAL FEATURES

This WSA has several special features of interest.

The Horn offers some of the best opportunities for rock climbing in central Utah. All levels of climbing difficulty are possible at one easily accessible site.

Since Mt. Pennell is the second highest peak in the Henry Mountains, outstanding scenic vistas (as far as Colorado and Arizona) are possible from the summit. Furthermore, the 1-mile change in elevation from base to summit allows for the presence of four distinct biological life zones.

Portions of the WSA serve as summer range for the Henry Mountain bison herd. Bison are frequently seen in the vicinity of The Horn. Views south from Swap Mesa, Cave Flat, and Cave Point are exceptional.

Land Use Plans and Controls

There are no rights-of-way, private in-holdings, or non-Federal subsurface rights in the WSA, nor are there any private lands adjacent to the WSA.

There is one State section within the WSA and an additional ten State sections adjacent to the WSA. The management philosophy for all State sections is to maximize economic returns for the State School Fund. Except for grazing, no activities are currently occurring on these sections. They are under lease for oil and gas.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers this WSA. The master plan recognizes that the county possesses "... Some of the most spectacular scenery in the United States ... The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the Mt. Pennell WSA, be retained for multiple use. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The WSA is managed under the BLM Henry Mountain Planning Area MFP (USDI, BLM, 1982c) which generally allows for multiple use as described in the No Action Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Socioeconomics

DEMOGRAPHICS

The WSA lies within Garfield County, one of Utah's least populated and most rural counties. In 1980, the Garfield County population was 3,673, reflecting a population density of 0.71 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981 and University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Ticaboo, about 25 road miles south, also in Garfield County. Ticaboo had a 1980 population of about 300. Since 1980, the population has declined to between 150 and 200. Hanksville (a small community of approximately 351 people), located about 35 road miles to the north of the WSA, and Green River, approximately 100 road miles north of the WSA in Emery County, are the main gateways and service areas for visitors to the Mt. Pennell WSA.

EMPLOYMENT

Garfield County is one of the poorest counties in the State of Utah (South et al., 1983). Table 10 indicates 1980 employment sectors for the county. Government is the largest employment sector within the county and represents 21 percent of the work force, followed by construction, services, manufacturing, and agriculture (refer to Table 10). The county, however, maintains a diversified economic base (South et al., 1983). The Town of Escalante relies on farming, stockraising, and lumbering, supplemented by tourism, some oil production, and government employment (South et al., 1983). Another town, Boulder, continues to rely on agriculture.

INCOME AND REVENUES

In Garfield County, the nonfarm industry sector in 1980 produced over 96 percent of total labor and proprietors' income representing an annual growth rate of 22.2 percent (University of Utah, Bureau of Economic and Business Research, 1982) (refer to Table 11). Almost 80 percent of this income came from the private sector, principally mining, construction, and manufacturing, while government sources produced 20 percent of personal income and earnings for the county. Farming produced 3.8 percent of the county's total personal income, amounting to \$949,000.

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 12 summarizes local sales and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate sales and revenues.

TABLE 10
1980 Employment
Garfield County, Utah

Industrial Sector	Number	Percent
Agriculture	236	11
Mining	210	10
Construction	379	17
Manufacturing	248	11
Transportation, Communication, and Utilities	85	4
Wholesale and Retail Trade	125	6
Finance, Insurance, and Real Estate	16	1
Services	266	12
Government	457	21
Nonfarm Proprietors	157	7
Total	2,179	100

Sources: Utah Department of Employment Security, 1980;
USDC, Bureau of Economic Analysis, 1982.

TABLE 11
1980 Personal Income and Earnings
Garfield County, Utah

Type/Source	Earnings Income (in \$1,000)	Components as percent of Totals	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietor Income (Earnings)	24,792	100.0	21.9
Total Labor and Proprietor Income by Industry Source			
Farm	949	3.8	16.6
Nonfarm	23,843	96.2	22.2
Private	19,049	79.9	26.5
Agricultural Service and Other	79	0.3	(D)
Mining	4,222	17.7	47.0
Construction	5,536	23.2	66.5
Manufacturing	3,294	13.8	14.2
Transportation and Public Utilities	1,545	6.5	16.8
Wholesale Trade	96	0.4	1.3
Retail Trade	1,302	5.5	7.6
Finance, Insurance and Real Estate	189	0.8	(D)
Services	2,786	11.7	16.3
Government	4,794	20.1	10.8

Sources: USDC, Bureau of Economic Analysis, 1982;
University of Utah, Bureau of Economic and Business
Research, 1982.

¹Earning components as a percent of total earnings; totals
do not equal 100.

²Earning components as a percent of total earnings for
nonfarm sector.

³Earning components as a percent of incremental earnings
within private sector.

(D) Not shown to avoid disclosure of confidential infor-
mation or for items \$50,000 or less. Data are included in
totals.

The WSA has 113 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Twenty-two livestock operators have a total grazing privilege of 3,282 AUMs within the WSA. If all this forage were utilized, it would account for \$65,640 of livestock sales and \$16,410 of ranchers' returns to labor and investment.

The WSA's recreational use is moderate and related local expenditures are well distributed. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Mt. Pennell WSA is estimated as about 2,580 visitors per year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Garfield and possibly Wayne and Emery Counties.

The WSA generates Federal revenues from mineral leases and claims and livestock sources (refer to Table 12).

TABLE 12
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	None	\$148,680
Mining Claim Assessment	Less than \$11,300	None
Livestock Grazing	\$65,640	\$4,595
Recreational Use	Less than \$10,578	² Unknown
Total	Less than \$87,518	Up to \$153,275

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not
account for the total income that would be generated by
these expenditures.

²A few commercial permits have been issued since 1980.

Oil and gas leases in the WSA cover approxi-
mately 49,560 acres. At up to \$3 per acre, lease
rental fees generate up to \$148,680 of Federal
revenues annually. Half of these monies are
allocated to the State, which then reallocates

these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 3,282 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$4,595 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of the BLM WSAs by SAI (1982). These estimates are based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and eco-

nommic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is unknown but would probably be low due to the WSA's rough terrain and low resource potential. The following is a worst-case analysis, based on the assumption that minerals would be developed sometime in the future and would result in the following disturbance: oil and gas, 160 acres; gold, 30 acres; and uranium, 20 acres. (Appendix 10 lists surface disturbance assumptions and estimates.) In addition, up to 1,183 acres could be disturbed by chaining of vegetation to increase forage production.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. The proximity of the WSA to Capitol Reef National Park may result in restrictions on development to meet PSD Class I limitations. Disturbance of 210 acres by mineral activities would result in only minor increases in fugitive dust emissions. Chaining and seeding of 1,183 acres would also result in short-term increases in fugitive dust as the area is chained.

GEOLOGY

No impacts to geology are expected because surface disturbance associated with locatable minerals (i.e., uranium and gold) and oil and gas exploration and development activities would probably not exceed 210 acres. This would not significantly affect geology. Chaining of vegetation would not affect geology.

SOILS

It is estimated that up to 210 acres of soil could be disturbed by mineral and energy exploration and development. Assuming that all disturbance would occur in areas with critical erosion class (worst-class analysis) and that erosion condition would increase one class, soil loss on the 210 acres would increase from 567 cubic yards/year to 1,134 cubic yards/year.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 567 cubic yards (less than 1 percent) over current annual soil loss. This is a small increase and the effects would likely be imperceptible. Soil loss would decrease following reclamation.

The 1,183-acre chaining would be designed to improve ground cover and soil conditions. Ground cover would be disturbed during the early implementation stages (1 to 2 years). Within 3 years ground cover would equal or exceed cover prior to chaining (USDI, BLM, 1983b).

VEGETATION

Because protective measures would be implemented under existing law, as well as BLM policy and regulations, and the maximum anticipated energy and mineral related disturbance would be no more than 210 acres, the potential disturbance under this alternative would not result in a major change in any vegetation type. In addition, about 1,183 acres of pinyon-juniper vegetation would be altered by chaining, but in the long term would gradually revert to the original type unless the areas were rechained (USDI, BLM, 1983b).

Two species of sensitive (candidate threatened or endangered) plants could occur within or near the WSA and one endangered plant species is known to occur in the WSA. Before authorizing surface-disturbing activities, BLM would conduct site-specific clearances of the potentially disturbed areas (210 acres) and informally consult with the FWS as required by BLM policy (refer to Appendix 4). If any threatened or endangered species could be affected, BLM would initiate formal Section 7 consultation with the FWS under provisions of the Endangered Species Act. Appropriate mitigating measures would be applied. Because necessary measures would be taken to protect these plants, it can reasonably be concluded that the viability of populations of threatened, endangered, or sensitive species would be preserved with the No Action Alternative.

WATER RESOURCES

No significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the 567 cubic yards of annual soil loss from surface disturbance. Opportunities for maintenance, additional improvements, or expansion of existing water sources could occur but are not planned in the current MFP for the Henry Mountain Planning Area.

Mineral exploration and development in the area would generally be confined at or near the surface or with widely spaced wells and would not significantly change ground water quantity or quality.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The potential for up to 10 million barrels of oil or up to 60 billion cubic feet of natural gas (in-place) exists within the WSA. About 3 million barrels of oil or 18 billion cubic feet of gas would be recoverable (refer to Appendix 6 for estimates of recoverability). These oil and gas resources could be explored and developed, subject to Category 1 (standard stipulations) on 49,400 acres and Category 2 (standard and special stipulations) on 24,900 acres. This alternative would have no effect on the operator's ability to explore and develop the area. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. Due to the small size of these deposits, production is not expected under this alternative.

Coal

Approximately 12.3 million tons of coal on 1,270 acres would remain unsuitable for leasing for protection of bison habitat and could not be recovered.

Locatable Minerals

The entire WSA would remain open to mining claim location. The potential deposits of locatable minerals (less than 500 tons of uranium, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper) could be located and developed in the future under this alternative. Approximately 50 acres could be disturbed due to exploration and development of these locatable mineral resources. Employment of unnecessary or undue degradation stipulations would not affect the operator's ability to develop the area. However, the likelihood of development is thought to be low because of economic considerations (e.g., transportation and low resource potentials).

WILDLIFE

Under this alternative, 21,250 acres of crucial-critical deer range, 21,500 acres of high priority deer winter range, 45,820 acres of crucial-critical bison range, and 2,000 acres of limited-value bison yearlong range would not be protected by application of the "Wilderness Management Policy" with its reduced likelihood for surface-disturbing and other activities. As much as 210 acres of crucial-critical mule deer and bison range could be subject to surface-disturbing activities associated with mineral and energy related activities. This acreage represents approximately 0.4 percent of the total crucial deer and bison range within the WSA. However, under this

alternative the potential exists for chaining and seeding approximately 1,183 acres in the WSA which would provide a potential net increase in forage production of 132 AUMs. Approximately 30 percent or 40 AUMs would be allocated to the bison herd and 92 AUMs would be allocated to livestock. This additional forage (including high quality forbs) would help reduce grazing pressure and forage competition on crucial deer summer range within the WSA. The current deer population on crucial summer range within the WSA is estimated at 59 animals (USDI, BLM, 1983b). Because forage competition would be reduced deer numbers could increase slightly.

The current number of bison utilizing the area within the WSA is estimated at 200 animals (USDI, BLM, 1983b). Based on the assumption that bison are evenly distributed throughout this range and that all surface disturbance would occur on this area, the loss of 210 acres from surface disturbance and other activities would reduce the carrying capacity for the bison population by one or two animals within the WSA. On the other hand, if land treatment were completed and AUMs from land treatments on crucial bison summer range within the WSA were used by bison, this alternative could provide forage to support an additional 15 animals on this range.

Because habitat loss and reduction in deer and bison numbers from surface disturbance and other activities would be more than compensated by increased range quality following reclamation, the opportunity exists under this alternative to increase deer and bison populations within the area. The actual balance of use that would result between livestock, deer, and bison is unknown.

There would be no impacts to threatened, endangered, or sensitive animal species under this alternative because none are present within the WSA. No projects for wildlife habitat enhancement have been specifically identified.

FOREST RESOURCES

Most of the large timber stands in this WSA are on slopes over 40 percent and are, therefore, not harvestable. The ponderosa pine is large, old-growth timber on gentle to moderate slopes with good access. However, average stocking and board foot volumes per acre are low.

Although some commercial timber is present at The Horn, the Henry Mountain Planning Area MFP recommended that there be no commercial timber harvest and that the area be placed in a modified fire suppression classification. Therefore, the No Action Alternative would not result in any significant increase in harvest or loss of forest resources in the WSA.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 3,282 AUMs in the WSA currently allocated in portions of five allotments are controlled by 22 permittees. There would be no changes in or effect on the current livestock management under this alternative. There would be no restriction on use of motor vehicles for maintenance of the 4 miles of fence, seven reservoirs, 6 miles of pipeline, two wells, and one corral. Additional roads or other facilities for livestock, including a chaining, two proposed spring developments, and one livestock reservoir, could be developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA few, if any, changes in livestock management techniques are expected. Mineral-related disturbances could result in short-term loss of livestock forage.

The *Final Henry Mountain Grazing Management EIS* (USDI, BLM, 1983b) identified approximately 1,183 acres on the southwest side of Mt. Pennell which could be chained for a predicted forage gain of approximately 132 AUMs. Seventy percent or 92 AUMs would be allocated for livestock use; 30 percent or 40 AUMs would be allocated for the bison herd.

VISUAL RESOURCES

Under this alternative 210 acres of mineral and energy related exploration and development are possible, as well as 1,183 acres of pinyon-juniper chaining. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in VRM Class II areas. Even after rehabilitation, some permanent localized degradation would be expected. The 1,183-acre chaining would create long-term contrasts on less than 2 percent of the WSA. If roads, vehicular ways, and drill pads are located throughout the area of oil and gas and mineral exploration and development (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole.

CULTURAL RESOURCES

Disturbance of 210 acres by mineral and energy exploration and development and 1,183 acres by chaining under this alternative could affect cultural sites. Only 16 prehistoric sites have been identified. None have National Register significance. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and

would lessen impacts. The overall effect on cultural resources would be low due to the limited amount of cultural resources in the area and to mitigating measures that would be taken prior to surface-disturbing activities. Vandalism of sites (not currently a problem) would be expected to increase in proportion to the general population increase.

RECREATION

The quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. Under this alternative, mineral and energy related exploration and development are possible on 210 acres and chaining on 1,183 acres. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for mineral and energy exploration and development would improve access into the area for nonprimitive recreation. The WSA would remain open to ORV use under this alternative.

Chaining would have short- and long-term impacts on sightseeing and primitive recreation because of effects of intrusions on scenic and primitive values. However, chaining would improve big game habitat and would increase the opportunity for zoological sightseeing and hunting (USDI, BLM, 1983b).

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use could increase from 2,580 current visitor days per year to 3,884 visitor days at the end of 20 years.

WILDERNESS VALUES

Under this alternative the WSA would be managed under the Henry Mountain Planning Area MFP and the identified wilderness values would not receive the degree of protection afforded by wilderness designation.

Approximately 210 acres of mineral and energy exploration and development and 1,183 acres of chaining are possible. The mineral and energy related surface disturbance would result in a significant loss of naturalness, solitude, and outstanding opportunities for primitive and unconfining recreation throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for mineral

development and related disturbance is low in this WSA. The 1,183-acre chaining would result in a long-term loss of naturalness on less than 2 percent of the WSA and would not be consistent with wilderness values.

LAND USE PLANS AND CONTROLS

The applicable plans are the *Garfield County Master Plan* and the BLM Henry Mountain Planning Area MFP. This alternative would be consistent with those plans because land use would continue as at present. It would also be consistent with the State of Utah policy of maximizing economic returns.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the oil and gas, uranium, and other locatable minerals in the WSA were developed it could lead to a significant increase in employment and income for Garfield and Wayne Counties. However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (3,282 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$65,640 annually in livestock sales and \$16,410 of ranchers' return to labor and investment. The identified potential chaining that would produce 92 AUMs of new allocated forage could lead to an additional \$1,840 of livestock sales and \$400 of ranchers' returns to labor and investment per year.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because recreational use in the area is estimated to increase only 1,304 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced

by this alternative. There are 24,740 acres in the WSA open to lease that are currently not leased. If leased they would bring up to \$74,220 additional Federal lease fee revenues per year in addition to new royalties from lease production if oil and gas were discovered and produced. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$4,595 per year) would continue. The additional 92 AUMs of forage that would be produced by the identified potential chaining and allocated to livestock under this alternative would increase Federal revenues by up to \$129 annually. About 50 percent of the increased revenues would be returned to the local BLM office for use in range improvement projects. Overall there could be an increase in Federal fee revenues of \$74,349 per year under this alternative.

All Wilderness Alternative (74,300 Acres)

As cited in the Description of the Alternatives section, the major changes that could occur in the 74,300-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The 1,183-acre chaining and proposed livestock reservoir would not be allowed. The entire area would be placed in leasing Category 4 (closed to leasing). About 17 miles of existing vehicular ways and 11 miles of road in the WSA would be closed to vehicular use except for approvals by BLM as noted in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 50 acres of disturbance within the WSA. It is also assumed that the existing oil and gas leases would expire before production of commercial quantities, and that oil and gas leases would not be renewed or future leasing of oil and gas allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA. Because potentially disturbed areas would be smaller than under the No Action Alternative (50 vs. 1,393 acres), the impacts from development and surface disturbance on air quality, geology, soils, vegetation, water, and cultural resources for the All Wilderness Alternative would be less than those described for the No Action Alternative. Because the analysis of the No Action Alternative shows that impacts to these resources from surface disturbance would be insignificant, the impacts of disturbance are not discussed under the All Wilderness Alternative. Wilderness designation would provide additional protection to these

resources. Other effects on these resource due to changes in management are discussed below.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

Although 1,720 acres of the WSA are under pre-FLPMA and 47,340 acres are under post-FLPMA oil and gas leases, no exploration or development of oil and gas is presently occurring within the WSA. There are no known deposits of oil and gas.

Existing pre- and post-FLPMA leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be reissued. Exploration for and development of a potential resource of less than 10 million barrels of oil or less than 60 billion cubic feet of natural gas (in-place) with 3 million barrels of oil or 18 billion cubic feet of natural gas that could be recoverable would be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant loss of potential oil and gas recovery.

Coal

Approximately 12.3 million tons of coal on 1,270 acres could not be mined. This represents 2 to 4 percent of coal available in the Henry Mountain Coal Field. Since the identified coal area has already been established as unsuitable for surface mining activities and underground recovery is not feasible, this would not be a significant change from present management.

Locatable Minerals

Approximately 2,328 acres are under 113 mining claims within the WSA. There are no known commercial deposits of gold, copper, silver, or uranium in the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. It is estimated that, if uranium and other locatable minerals are located prior to wilderness designation, up to 50 acres could be disturbed due to exploration and development. The worst-case impact to minerals would occur if the potential minerals are not within mining claims filed prior to designation. In that case the potential for recovery of up to 500 tons of uranium, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper would be foregone. After designation, all other lands within

the WSA (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Because production of these metals is not currently occurring and economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that development would occur even without wilderness designation. Therefore, this alternative would not result in any significant loss of locatable mineral resources or their production on a local, regional, or national level.

WILDLIFE

Under this alternative 48,155 acres of crucial deer and/or bison habitat, including 21,250 acres of crucial-critical deer range and 45,820 acres of crucial-critical bison range (refer to Table 7) would be protected by the application of the "Wilderness Management Policy" and by the reduced likelihood for surface-disturbing and other activities. However, 50 acres of crucial deer summer range could be subject to surface disturbance associated with existing mineral rights. This acreage represents less than 0.1 percent of the total crucial deer and bison habitat within the WSA. In addition, this alternative would preclude the opportunity for chaining and reseeding as much as 1,183 acres of pinyon-juniper vegetation in the southwest side of Mt. Pennell on crucial deer and bison summer range. Approximately 33 percent of the WSA is pinyon-juniper and about 25 percent of this is suitable for treatment. Thirty percent of the forage increase or 40 AUMs would be allocated to bison. Because summer range is considered a limiting factor for mule deer in the Henry Mountains (USDI, BLM, 1983b) and land treatments that would enhance the quality of this range would not be allowed, mule deer numbers in the WSA would be expected to remain at their present low levels under this alternative. Because the chaining would not be allowed, a potential for approximately 40 AUMs of bison forage increase would be lost under this alternative.

Even though there is sufficient forage in the WSA to meet current bison needs (USDI, BLM, 1983b), these land treatments are important to bison. Not only would these treatments provide additional forage, but they would also help reduce grazing pressure and forage competition on other crucial bison summer ranges in the vicinity of the WSA.

Because land treatments enhancing the quality of crucial summer ranges would not be allowed, bison numbers (approximately 200 presently) within the WSA would be expected to remain static in the long term under this alternative.

There would be no impacts to threatened, endangered, or sensitive animal species under this alternative.

FOREST RESOURCES

Under this alternative, no woodland harvest would occur. Nearly all of the aspen and Douglas fir timber is on steep slopes (over 40 percent) and is unavailable for harvest because of terrain. The old ponderosa pines are potentially harvestable but average stocking and board foot volumes are low. Although some commercial timber is present at The Horn, the 1982 Henry Mountain Planning Area MFP recommended that there be no commercial timber harvest and that the area be placed in a modified fire suppression classification. Therefore, this alternative would not result in any significant changes in management of forest resources in the WSA.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 3,282 AUMs currently allocated in the WSA are controlled by 22 livestock permittees. Additional roads or other facilities for livestock handling could be prevented in the future if not compatible with wilderness values.

Approximately 1,183 acres have been identified for chaining with a predicted gain of approximately 132 AUMs. Seventy percent or 92 AUMs would be allocated to livestock, 30 percent or 40 AUMs would be allocated to the bison herd. Under this alternative, this potential gain would be lost as would the opportunity to develop a livestock reservoir. The impact to the livestock industry within the area would be relatively small because the 92 potential AUMs represent only a 3-percent increase in forage within the WSA. Designation of the WSA as wilderness could reduce short-term forage loss due to mineral and energy exploration and development.

VISUAL RESOURCES

This alternative would ensure preservation of the visual resources in the Sawmill Basin area. This area is easily observed from Lonesome Beaver Campground, Wickiup Pass, Bull Creek Pass, and the summit of Mt. Ellen. Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), closure to ORVs, prevention of chaining, and closure of the entire area to future mineral leasing and location.

Under this alternative the possible mineral-related surface disturbance would be reduced from 1,393 acres to 50 acres, associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining claims could not be denied (worst-case analysis), VRM Class I objectives might not be met on large portions of the WSA. Because the potential for development of mining claims is low, visual quality would probably be preserved in the WSA as a whole.

CULTURAL RESOURCES

Approximately 50 acres (0.07 percent of WSA) could be disturbed by mineral-related activities; however, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance and would mitigate any adverse impacts. Inadvertent loss or damage to cultural resources could occur. However, these impacts are expected to be minimal. This WSA is known to contain 16 prehistoric sites. No National Register sites are known to exist.

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use.

The All Wilderness Alternative could be expected to benefit recreation to a small degree by reducing the likelihood of surface-disturbing activities from the 1,393 acres projected for the No Action

Alternative to 50 acres and increasing management attention and recognition of recreation values. The hiking routes to the summit of Mt Pennell, the rock climbing opportunities at The Horn, the undeveloped camping areas, and the existing opportunities for hiking, hunting, camping, and photography would be enhanced by the more intensive management of the area through the "Wilderness Management Policy." Potential increases in zoological sightseeing and hunting from increases in wildlife populations that could result from chaining of pinyon-juniper vegetation would be lost.

The entire 74,300 acres, including 17 miles of vehicular ways and 11 miles of roads, would be closed to ORV use. However, no ORV use is occurring or is likely to occur due to topographic restraints. The 17 miles of vehicular ways and 11 miles of roads would not be available for recreational access, especially hunting access, which would probably reduce use of the area for hunting. Approximately 23.1 miles of road would be "cherry-stemmed" and would remain open to vehicular use. These roads, along with roads for development of valid mining claims, could reduce the quality of primitive recreational opportunities throughout the western portion of the WSA. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved in the eastern portion of the area.

WILDERNESS VALUES

Designation and management of all 74,300 acres as wilderness would contribute to the preservation of the wilderness values of size, naturalness (71,000 acres), and outstanding opportunities for solitude and primitive and unconfined recreation (less than outstanding on 56,500 acres), except on up to 50 acres that could be disturbed due to possible mineral location and development. These disturbances would have long-term effects on wilderness values in localized areas but would not be expected to significantly affect wilderness values in the area as a whole. The special geologic and scenic features in this WSA would also be preserved. Although recreation use could increase (refer to Recreation section), use would be managed and relative to the size of the area, would be low. Thus, no significant effect on existing solitude and recreational values would be expected.

LAND USE PLANS AND CONTROLS

The *Garfield County Master Plan* favors multiple use of the lands within the Mt. Pennell WSA. This

alternative is generally consistent with the multiple-use concept since most resource uses would continue, although under more restrictive conditions. This alternative would conflict with the county's multiple-use concept in the area of minerals because restrictive conditions would be placed on mineral development, including the phasing out of existing leases and closure of the area to future mineral location and lease. If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

The BLM Henry Mountain Planning Area MFP does not provide for wilderness designation. A decision by Congress to designate the WSA as wilderness would be an amendment to the MFP.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 12) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$65,640 of livestock sales and \$16,410 of ranchers' return to labor and investment. The proposed chaining for increase in livestock forage would be foregone along with the potential increase of \$1,840 of livestock sales and \$460 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase recreational use

(refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide). Federal revenues and the portions allocated to the State and local communities would be lost.

The loss of 49,560 acres now leased would cause an eventual loss of up to \$148,680 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$74,220 annually in Federal revenues from the 24,740 acres that could be leased without designation. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

Because the identified potential chaining would not be developed and used, an estimated annual \$129 of Federal grazing revenues from 92 additional AUMs would be foregone. Recreation-related Federal revenues might increase if the demand for commercial outfitter services increases. Commercial outfitters do not use the WSA on a regular basis, but designation could lead to more commercial recreational use of the area.

Overall, Federal revenues from existing and identified potential activities could be reduced by \$223,029 annually.

Partial Wilderness Alternative (25,800 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA for this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 25,800-acre area that would be designated as wilderness and the 48,500-acre area that would not be designated wilderness are discussed in the Description of the Alternatives section.

It is estimated that, because existing mining claims and potential mineralization would be in the designated area, some of the existing mining claims would eventually be explored and developed, causing an estimated 50 acres of disturbance in the designated portion. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing of oil and gas would not be allowed.

It is also estimated that, within the nondesignated area, only 104 acres would be disturbed sometime in the future due to oil and gas exploration and

development. Overall, 154 acres of mineral and energy related surface disturbance would occur within the WSA, 56 acres less than under the No Action Alternative and 104 acres more than with the All Wilderness Alternative. (Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.) Even though 30 acres of the identified potential chaining would be in the nondesignated portion and could be chained without consideration for wilderness values, only about three additional AUMs could be produced. This would be infeasible and it is assumed that the entire 1,183-acre area would not be chained under this alternative.

The analysis of the No Action Alternative, based on 210 acres of surface disturbance from mineral and energy exploration and development and 1,183 acres for chaining of vegetation, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, soils, water, vegetation, forest, and cultural resources. Therefore, these resources would not be significantly affected by this Partial Wilderness Alternative, which assumes 154 acres of surface disturbance.

Restrictions on management and development methods within the WSA would result in essentially the same impacts on development of water sources, mineral and energy resources, wildlife, livestock grazing, and land use plans as described for the All Wilderness Alternative. The following analysis describes the differences between the Partial Wilderness, No Action, and All Wilderness Alternatives.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and Gas

The area that would be designated wilderness would be placed in Category 4 status with no new leasing. About 18,560 acres of oil and gas leases are in the area that would be designated wilderness. Activities on these leases could occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of less than 10 million barrels of in-place oil or less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil or 18 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration

and development of a potential resource of up to 2.0 million barrels of oil and 6.3 billion cubic feet of natural gas could be foregone. This would allow recovery of 1 million more barrels of oil and 11.7 billion more cubic feet of natural gas than with the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil and gas resource.

Coal

Approximately 12.3 million tons of coal on 1,270 acres would be within the 48,500-acre nondesignated portion of the WSA. However, coal would not be recoverable under this alternative because the area would continue to be managed as unsuitable for surface mining, and underground mining is not feasible in the WSA.

Locatable Minerals

All 2,328 acres of existing mining claims fall within the area that would be designated wilderness. Development work, extraction, and patenting could continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Based on the known occurrence of minerals in the WSA all of the 500 tons of uranium, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper potentially in the WSA are thought to be within the area that would be designated as wilderness under this alternative. If mineral deposits were not included in mining claims filed before designation, the potential for recovery of the uranium, gold, silver, and copper would be foregone as with the All Wilderness Alternative.

Because metals are not being recovered at present within the WSA and because economic considerations (e.g., transportation, low potential, etc.) are unfavorable, it is unlikely that exploration or development will occur even without wilderness designation. Therefore, this alternative would not prevent recovery of significant amounts of uranium, gold, silver, and copper.

WILDLIFE

About 27,355 acres (about 57 percent of the WSA) of deer and/or bison crucial-critical habitat (refer to Table 7), would be within the designated portion. These habitats would be protected by

application of the “Wilderness Management Policy” and by the reduced likelihood for surface-disturbing and other activities.

Only 50 acres of crucial-critical deer and/or bison range in the designated portion could be subject to surface-disturbing activities associated with existing mineral rights. This acreage represents less than 0.1 percent of the total crucial deer and bison habitat within the WSA.

In addition, this alternative would also preclude the opportunity for the chaining and seeding of 1,183 acres on crucial-critical deer and bison summer range as described in the All Wilderness Alternative. Mule deer numbers in the WSA would be expected to remain at their present low levels. Foregone treatments would not provide the potential 40 AUMs of additional forage to bison. Grazing pressure and forage competition on other crucial-critical bison summer ranges in the area would continue as described for the All Wilderness Alternative. Bison numbers (approximately 200) within the WSA would be expected to remain static in the long term under this alternative.

There would be no impacts to threatened, endangered, or sensitive animal species under this alternative because none are present within the WSA. No projects for wildlife habitat enhancement have been specifically identified.

About 20,800 acres of crucial-critical deer and/or bison winter range is in the portion of the WSA that would not be designated wilderness and would not be protected by application of the “Wilderness Management Policy” with its reduced likelihood for surface-disturbing and other activities. This acreage would be managed in accordance with the Henry Mountain Planning Area MFP. Possibly 104 acres of benchlands in the Cave Flat and Swap Mesa portions of the WSA could be disturbed from oil and gas exploration and development. However, because of the small acreage that could be disturbed, no significant loss of habitat or wildlife populations is expected to occur in this portion of the WSA.

LIVESTOCK

Overall livestock grazing allocations would remain as at present. The portion of the WSA that would be designated presently supports 891 of the total 3,282 AUMs of livestock use in the WSA. The *Final Henry Mountain Grazing Management EIS* identified approximately 1,183 acres on the southwest side of Mt. Pennell which could be chained for a predicted forage gain of approximately 132 AUMs. Under the MFP, 70 percent or 92 AUMs would be allocated for livestock use, and 30 percent or 40 AUMs would be allocated for the bison herd.

Under this alternative this potential would be foregone. Wilderness designation of 25,800 acres would affect domestic livestock grazing the same as with the All Wilderness Alternative. Of the existing livestock facilities, 2 miles of fence, one reservoir, and one corral would be within the designated portion. Development of future roads or other livestock management facilities for use with the 821 AUMs in the portion that would be designated could be restricted to preserve wilderness values. The present domestic livestock grazing use of 2,391 AUMs in the portion of the WSA that would not be designated would continue as authorized in the BLM Henry Mountain Planning Area MFP with impacts being the same as described under the No Action Alternative.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area’s visual resources. Existing quality and VRM Classes are given in Table 9.

Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), continuation of the ORV closure, prevention of a chaining, and closure of the entire area to future mineral leasing and location.

Because total surface disturbance in the WSA would be 154 acres under this alternative, as opposed to 1,393 acres under the No Action Alternative and 50 acres under the All Wilderness Alternative, the impact to visual resources would be less than under the No Action Alternative and slightly more than under the All Wilderness Alternative.

This disturbance would be associated with development of valid mining claims. Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation some permanent localized degradation could be expected. If roads for development of valid mining claims could not be denied (worst-case analysis), VRM Class I objectives might not be met on large portions of the designated area. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

Visual quality in the portion of the WSA that would not be designated wilderness (48,500 acres) would be protected by limitations placed on potential

surface-disturbing activities. One hundred and four acres of oil and gas related exploration and development are possible. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in Class II areas during the short term. Even after rehabilitation, some permanent localized degradation would be expected. Visual quality would probably not be significantly reduced in the WSA as a whole from only 104 acres of surface disturbance.

RECREATION

Impacts on recreational values and opportunities for the 25,800-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative. Because terrain generally limits ORV use in the WSA, little impact on ORV recreational use would be expected. However, approximately 3 miles of ways within the WSA would not be available for recreational access, especially hunting access. This would probably reduce use of the area for hunting.

In the area that would not be designated (48,500 acres), little change in recreational use is expected due to the limited recreational values.

As with the All Wilderness Alternative, recreational use could increase at a rate slightly greater than the baseline due to publicity of the area.

If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the designated area.

In the portion of the WSA that would not be designated wilderness, the quality of a user's primitive recreational experience would be reduced by surface-disturbing activities. Because only 104 acres of oil and gas related exploration and development are projected, primitive recreational opportunities would probably not be significantly reduced from the present situation.

WILDERNESS VALUES

Impacts to wilderness values would be the same as under the All Wilderness Alternative on the 25,800 acres that would be designated wilderness.

The designated area would contain 25,790 acres in natural condition. Three miles of ways exist on the south side of Bulldog Ridge, leading to stock

watering troughs. These ways are substantially unnoticeable. There is also 1 mile of road leading to Hancock Springs Cabin and 4 miles of road to a transmitter site on a ridge south of Mt. Pennell. Both roads are "cherry-stemmed" and would remain in use. Several old cabins exist in Straight Creek and would remain. Naturalness would be less than outstanding on about 10 acres.

About 17,800 acres of the designated portion meet the outstanding criteria for solitude and primitive and unconfined recreation; the remaining 8,000 acres do not meet the outstanding criteria.

The designated portion contains The Horn, an outstanding rock climbing area, and Mt. Pennell, the second highest peak in the Henry Mountains. Portions of the area contain bison summer range. Although recreational use could increase (refer to Recreation section under the All Wilderness Alternative), use would be managed and would be low relative to the size of the area. Therefore, no significant effect on solitude and primitive recreation values from increased recreation would be expected.

In the area that would be designated wilderness, the potential for surface-disturbing activities that could impair wilderness values would be reduced.

No development of leases on the designated portion is foreseen under this alternative. However, the possible mineral-related surface disturbance within the WSA would be 50 acres for development of valid mining claims as under the All Wilderness Alternative. Mitigation to protect wilderness values would be considered during mining claim development. Because the potential for mineral production is low and mitigation would be imposed to protect wilderness values, these values would be preserved by partial wilderness designation.

In the 48,500-acre area that would not be designated, there would be only 104 acres of disturbance from oil and gas exploration and development activities. Those activities could degrade wilderness values (naturalness, special features, and opportunities for solitude and primitive recreation) from the commencement of activities through rehabilitation. About 45,200 acres of the 45,800 nondesignated acres meet the criteria for naturalness. All 45,800 acres lack outstanding opportunities for solitude and primitive and unconfined recreation. Thus, only slight long-term impairment of wilderness values in the portion that would not be designated would be expected. However, the sights, sounds, and emissions of those mineral and energy activities could

impair solitude and primitive recreation values in the portion that would be designated wilderness.

LAND USE PLANS AND CONTROLS

This alternative would relate to the Land Use Plans and Controls section as described for the All Wilderness Alternative, with the exception of the acreage not to be designated. On the 48,500 acres, nondesignation would be consistent with the *Garfield County Master Plan* and State of Utah plans and policies. It would be in conformance with the Henry Mountain Planning Area MFP.

SOCIOECONOMICS

With partial designation there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 12) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the 25,800-acre designated portion of the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral

development under the No Action Alternative. Because the potential for mineral development is low it is estimated that potential mineral-related local income would not be significantly reduced by partial wilderness designation. However, any local income related to assessment of future mining claims on the designated 25,800 acres would be lost.

Livestock use and ranchers' income would continue as at present with \$65,640 of livestock sales and \$16,410 of ranchers' return to labor and investment. The proposed chaining for livestock forage would be foregone along with the potential increase of \$1,840 of livestock sales and \$460 of ranchers' return to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 18,560 acres now leased would cause an eventual loss of up to \$55,680 per year of lease fees to the Federal Treasury. There would also be a potential loss of \$26,220 annually in Federal revenues from the 8,740 acres that could be leased without designation. In addition to these rental fees any potential royalties from new lease production would also be foregone.

Because the identified potential chaining would not be developed and used, an estimated annual \$129 of Federal grazing revenues from 92 increased AUMs would be foregone. Overall, Federal revenues from existing and identified potential activities could be reduced by \$82,029 annually as compared to \$223,029 with the All Wilderness Alternative.

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(UT-050-249)

INTRODUCTION

General Description of the Area

Mt. Hillers Wilderness Study Area (WSA) consists of 20,000 acres of public land in northeastern Garfield County located about 30 miles south of Hanksville, Utah. It is one of four BLM WSAs in the Henry Mountains, and lies between the Mt. Pennell and Little Rockies WSAs. Mt. Hillers is a large igneous intrusion surrounded by sedimentary rock. The west and north mountain sides are thickly vegetated with pinyon-juniper, mountain mahogany, shrub oak, and aspen. Ponderosa pine and Douglas fir are found at higher elevations. A stand of bristlecone pine exists on the north side.

Average precipitation in the lower areas is about 7 inches per year while Mt. Hillers receives an average of about 21 inches annually. Temperatures can range from -20 degrees Fahrenheit (F) in winter to over 90 degrees F in summer.

Specific Issues Identified in Scoping

General issues pertaining to the WSAs in the Henry Mountain Resource Area are discussed in Volume I. Specific issues pertaining to the Mt. Hillers WSA were identified through formal public scoping (USDI, BLM, 1984c) and are responded to below.

1. *Comment:* The occurrence of the sensitive plant species *Astragalus henrimontanensis* in or near this WSA should be considered in the decisionmaking process.

Response: There were no threatened, endangered, or sensitive plant species identified in the WSA. *Astragalus henrimontanensis* was a candidate species under review by the U.S. Fish and Wildlife Service (FWS) for threatened or endangered status. During the review it was found to be relatively abundant and has been dropped from further review.

2. *Comment:* The oil and gas potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be at least moderate. This information should be considered in the Draft Environmental Impact Statement (EIS).

Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

3. *Comment:* The area is uniquely suitable for water yield improvement through weather modification.

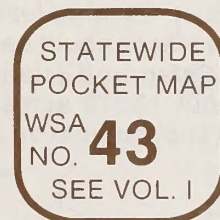
Response: Mt. Hillers, along with most high elevation mountains surrounded by desert, has potential for increased water yield through weather modification. Proposals for weather modification would be considered on a case-by-case basis to determine if they would be allowed under wilderness management.

4. *Comment:* The area has considerable uranium potential. This development would conflict with wilderness designation.

Response: Uranium potential and wilderness conflicts are discussed in the Affected Environment and Environmental Consequences sections of this document. The favorability for finding uranium within the WSA is moderate.

5. *Comment:* There is a need for considerable mechanical vegetation manipulation to benefit bison and mule deer herds.

Response: Wildlife improvements are discussed in the Affected Environment section. Vegetation manipulation in the WSA could provide additional forage which would be used by mule deer and bison. However, no improvements are currently planned for the area.



DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

No alternatives were identified for this WSA during scoping other than those analyzed.

Alternatives Analyzed

Three alternatives are analyzed for this WSA: (1) No Action; (2) All Wilderness (20,000 acres); and (3) Partial Wilderness (17,000 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 20,000-acre Mount Hillers WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1974). The State land within the WSA (refer to Map 1) has not been identified in the MFP for special Federal acquisition through exchange or purchase. State lands are analyzed as remaining under State ownership. Refer to Volume I for further information on State in-holdings.

The following are specific actions that would take place under this alternative:

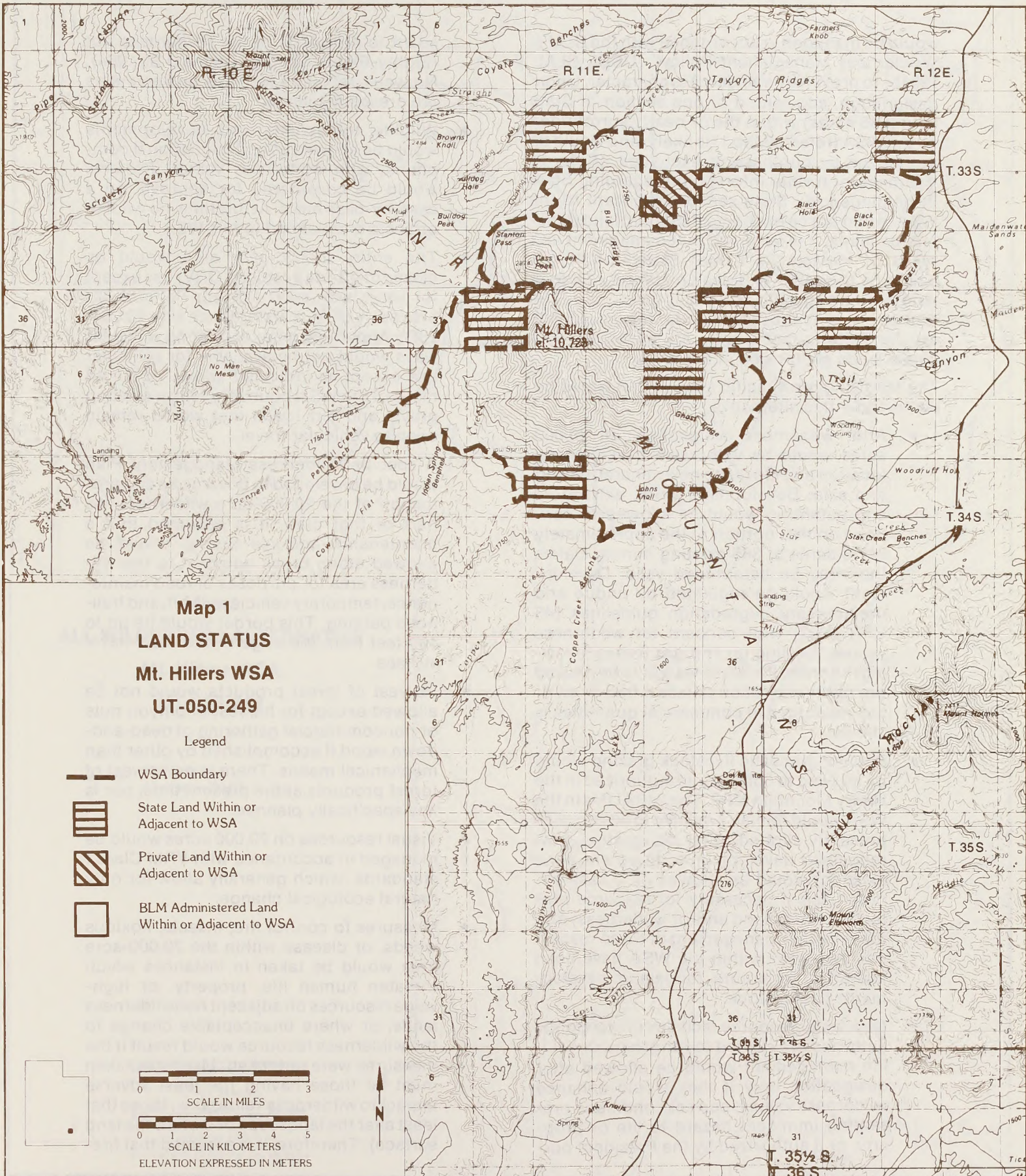
- All 20,000 acres would remain open to mineral location, leasing (with standard and special lease stipulations), and sale. Development work, extraction, and patenting would be allowed on existing mining claims (7,488 acres) and future mining claims. Development would be regulated by undue and unnecessary degradation regulations (43 Code of Federal Regulations [CFR] 3809). Existing leases (20,000 acres) and new leases could be developed under leasing Category 1 (standard stipulations) on about 16,319 acres and Category 2 (special stipulations) on about 3,681 acres.

- The present domestic livestock grazing use of the 20,000-acre area of the WSA would continue as authorized in the MFP (240 Animal Unit Months [AUMs]). Although none are now planned, new rangeland developments could be implemented without wilderness considerations.
- Developments for wildlife (including maintenance of chained areas, water resources, etc.) would be allowed without concern for wilderness values if in conformance with the Henry Mountain MFP. None are currently planned.
- The 20,000 acres, including the 3.50 miles of ways, would remain open for vehicular use in accordance with the Henry Mountain MFP. New access could be developed.
- The entire 20,000-acre area would continue to be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (19,235 acres), Class III (291 acres), and Class IV (474 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances which threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Methods of control would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

Under this alternative, all 20,000 acres of the Mt. Hillers WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2.) It

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would be managed in accordance with the BLM's "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of one section of State land (535 acres) within the or nearly surrounded by the WSA (refer to Map 1) is likely, and would be authorized by purchase or exchange. (Refer to Volume I for further information regarding State in-holdings.) Six State sections adjacent to the WSA would not be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located in the WSA.

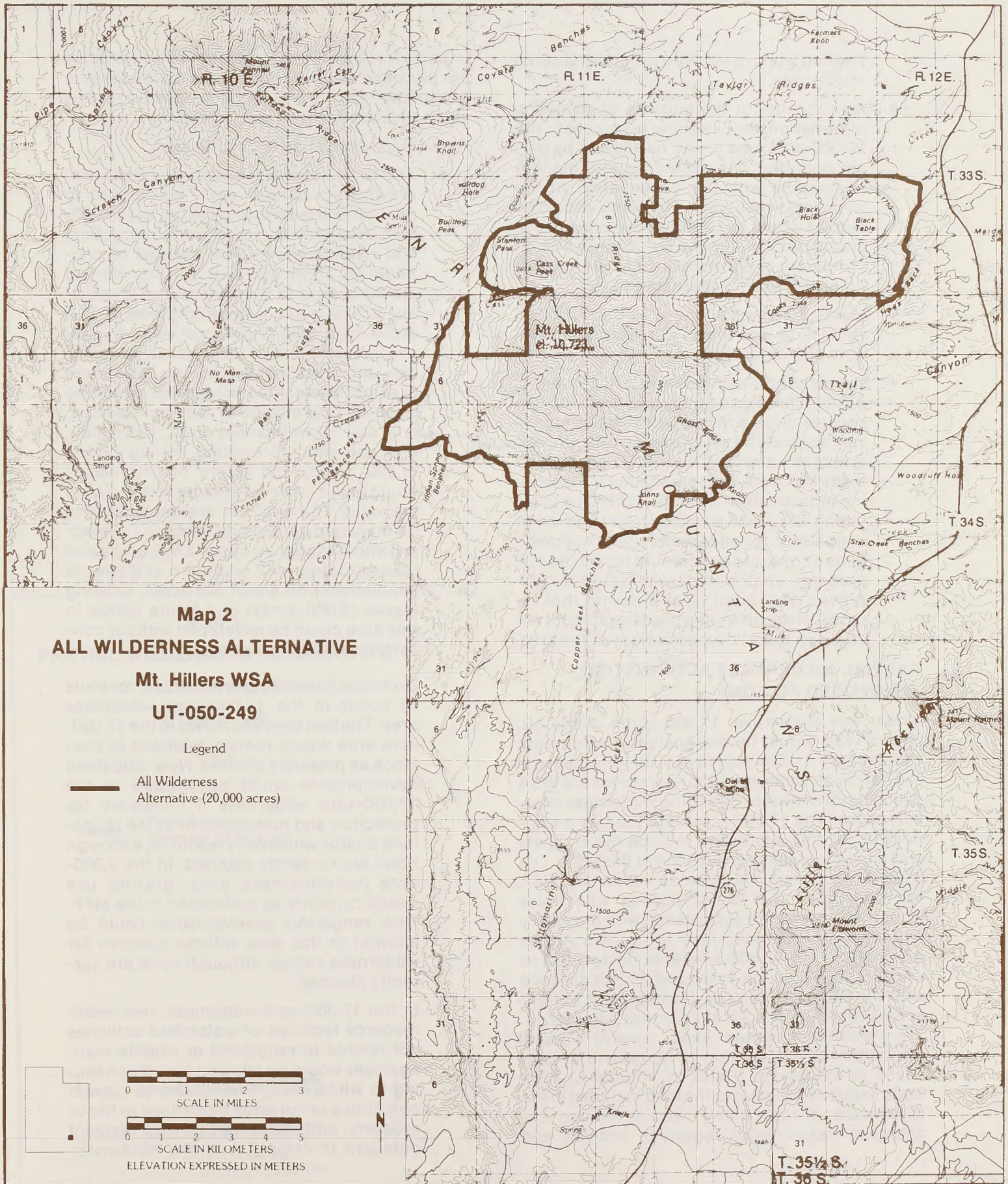
The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 20,000 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 7,488 acres of 385 existing mining claims that may be determined valid. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809) with concern for wilderness values. Existing oil and gas leases involving the entire 20,000 acres would be phased out upon expiration unless a find of oil or gas resources in commercial quantities is shown.
- Present domestic livestock grazing would be allowed to continue as authorized in the Henry Mountain MFP. The 240 AUMs in the WSA would remain available to livestock as presently allotted. After designation, new rangeland developments (there are none existing) would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources. No areas within the WSA have been identified for future rangeland developments for livestock.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pur-

suant to 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are presently planned.

- Wildlife transplants and developments would be allowed after designation if compatible with wilderness values. Projects would be considered for approval on a case-by-case basis. At this time, no wildlife projects are planned in this WSA.
- The entire 20,000-acre area would be closed to off-road vehicle (ORV) use except for users with valid existing rights if approved by BLM in accordance with 43 CFR 2920. About 3.50 miles of existing vehicular ways would not be available for vehicular use except as indicated above. About 13 miles of the WSA boundary follow existing gravel and dirt roads that would remain open to vehicular travel.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 20,000-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trail-head parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- Visual resources on 20,000 acres would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the 20,000-acre area would be taken in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that fire-

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fighting would be limited to hand and aerial techniques.

- Any activity for the purpose of gathering information about natural resources in the 20,000-acre area would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

PARTIAL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

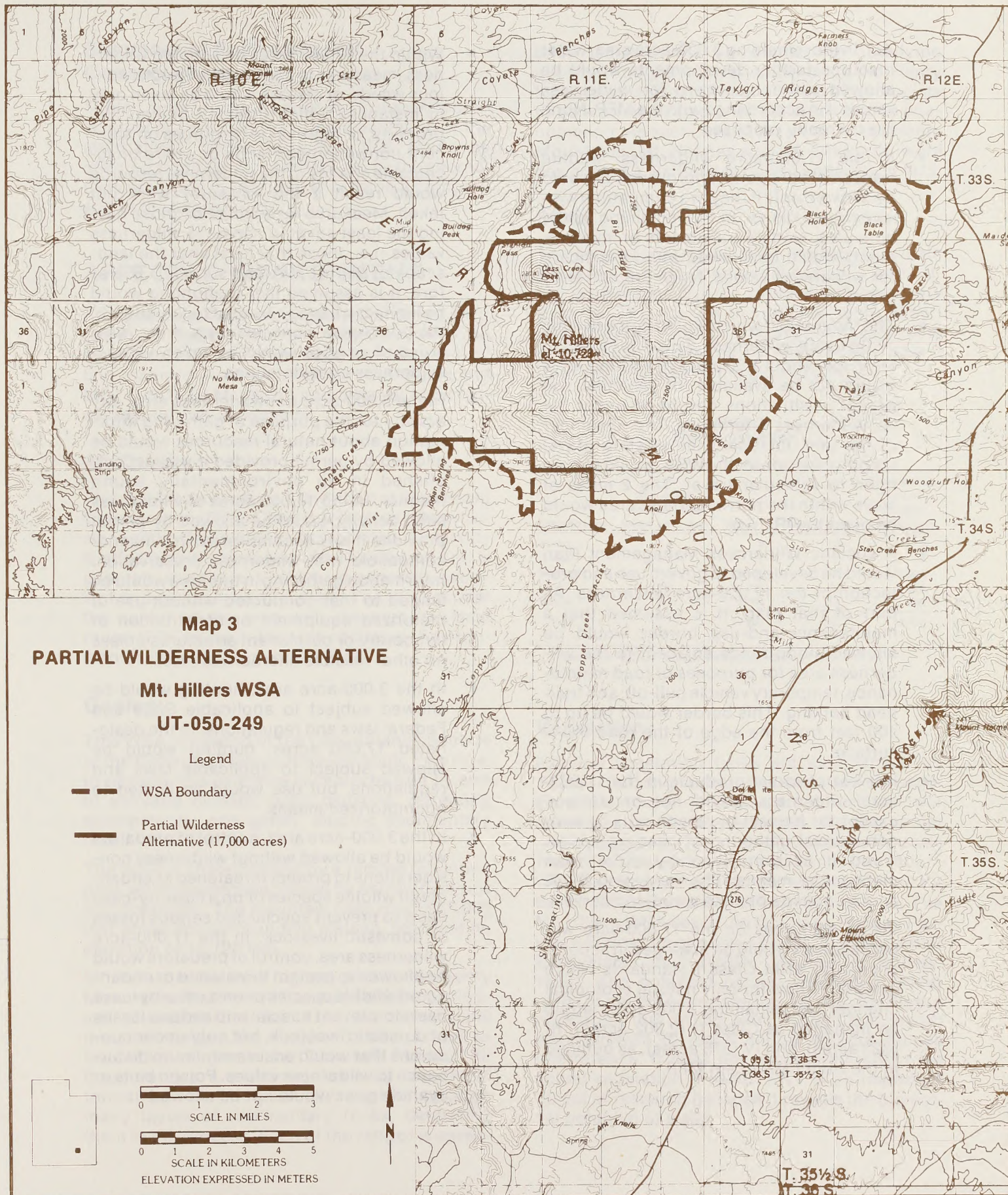
Under this alternative, 17,000 acres of the Mt. Hillers WSA would be designated as wilderness (refer to Map 3). The objective of this alternative is to analyze as wilderness that portion of the WSA which has the most outstanding wilderness characteristics. The 17,000 acres analyzed as wilderness under this alternative include the steepest and most mountainous portions of the WSA. The 3,000-acre foothill fringe areas within the WSA but outside of that designated as wilderness would be managed in accordance with the Henry Mountain MFP as described for the No Action Alternative. The 17,000-acre area designated as wilderness would be managed in accordance with the BLM "Wilderness Management Policy" as described in the All Wilderness Alternative. This alternative would likely involve Federal acquisition of one section of State land by purchase or exchange. (Refer to Volume I.) Four State sections adjacent to the land included in the wilderness portion likely would not be exchanged. Assumptions regarding analysis and

impacts for State lands involved in this alternative are the same as described for the All Wilderness Alternative. The figures and acreages under this alternative are for Federal lands only.

A summary of specific actions follows.

- The 17,000-acre wilderness would be withdrawn from mineral entry and closed to new mineral leasing and sale. In the 17,000-acre area, development work, extraction, and patenting would be allowed to continue on 5,908 acres of existing mining claims, provided they are valid. The existing oil and gas leases, which cover 17,000 acres, would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown. The 3,000-acre area not designated wilderness would be open to future mineral location, leasing, and sale. Development work, extraction, and patenting of existing mining claims (1,580 acres) and future mining claims could occur in the 3,000-acre area if claims are valid. The area not designated would be managed as leasing Category 1 (standard stipulations) on about 2,671 acres and leasing Category 2 (standard and special stipulations) on about 329 acres. Existing leases (3,000 acres) and future leases in this area could be developed without concern for wilderness values.
- Domestic livestock grazing would continue to occur in the 17,000-acre wilderness area. The less than 240 AUMs in the 17,000-acre area would remain available to livestock as presently allotted. New rangeland developments could be allowed in the 17,000-acre wilderness if necessary for protection and management of the rangeland and/or wilderness resource, although none are currently planned. In the 3,000-acre nonwilderness area, grazing use would continue as authorized in the MFP. New rangeland developments could be allowed in this area without concern for wilderness values, although none are currently planned.
- In the 17,000-acre wilderness, new water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed only if enhancing to wilderness, if necessary to correct conditions imminently hazardous to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness*

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Act. In the remaining 3,000-acre area, water resource facility developments would be allowed without concern for wilderness values if in accordance with the MFP. None are currently proposed.

- In the 17,000-acre wilderness, wildlife transplants or habitat improvements would be allowed only if they are compatible with wilderness values. In the remaining 3,000-acre area, wildlife transplants or improvements would be allowed without concern for wilderness values. None are currently proposed.
- The mountains, which would comprise the 17,000-acre wilderness, would be closed to ORV use. About 1.50 miles of existing ways would not be available for vehicular use except in situations described under the All Wilderness Alternative. The remainder of the unit, including the existing gravel roads which border the WSA, would remain open to vehicular travel. The 2 miles of ways within the nonwilderness area would be open to ORV use.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 17,000-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trail-head parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products in the 17,000-acre wilderness would not be allowed except for harvest of pinyon nuts or non-commercial gathering of dead-and-down wood if accomplished by other than mechanical means. The remaining 3,000 acres would be open to woodland harvest.
- Visual resources on the 17,000-acre wilderness area would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. The remaining 3,000 acres would be managed as Class II (2,302 acres), III (323 acres), and IV (375 acres), as outlined in the Henry Mountain MFP.

- Within the 17,000 acres designated wilderness, measures to control fire, insects, noxious weeds, or disease would be taken only in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques. In the 3,000-acre nonwilderness area, measures of control would be taken without wilderness considerations.
- In the 3,000-acre nonwilderness area, any activity for the purpose of gathering information about natural resources would be allowed by permit provided it was accomplished in an environmentally sound manner. In the 17,000 acres of wilderness such activity would be allowed by permit provided it was accomplished in a manner compatible with wilderness preservation. Information gathering in this area would be limited to that conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- In the 3,000-acre area, hunting would be allowed subject to applicable State and Federal laws and regulations. In the designated 17,000 acres, hunting would be allowed subject to applicable laws and regulations, but use would be limited to nonmotorized means.
- In the 3,000-acre area, control of predators would be allowed without wilderness considerations to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. In the 17,000-acre wilderness area, control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, but only under conditions that would ensure minimum disturbance to wilderness values. Poison baits or cyanide guns would not be allowed.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

This section briefly describes the affected environment. Unless otherwise stated, information for this section was taken from the Henry Mountain Planning Area Unit Resource Analysis and MFP (USDI, BLM, 1982c) and other BLM technical reports and documents.

Air Quality

This WSA is located in a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act, as amended. Air quality is affected little from sources of pollution and is generally excellent. Visibility is generally excellent and can exceed 138 miles. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979).

Geology

This WSA is located in the Canyonlands Section of the Colorado Plateau Physiographic Province. In general, this province is characterized by arid to semiarid climate, deep canyons, retreating escarpments, and gently dipping sedimentary rocks.

The WSA is characterized by a ragged mountain peak with steep slopes broken by narrow canyons and drainages. The mountain rises roughly 5,000 feet above the surrounding plateau, reaching an elevation of 10,723 feet.

Mt. Hillers is the third highest peak in the Henry Mountains. The Henry Mountains exhibit geological characteristics found in two other local mountain ranges, the Abajo and LaSal, as well as four other ranges in the Colorado Plateau. All these ranges are characterized by laccolithic formations which gradually pushed through many layers of sedimentary rocks, deforming them in the process. Each of the ranges is essen-

tially isolated and surrounded by low-lying deserts. The distinctive landform of the Henry Mountains is generally considered by geologists to be a prime example for the study of this phenomenon. As such, two of the peaks in the Henry Mountains (Mt. Holmes and Mt. Ellsworth) were designated a National Natural Landmark in 1975.

Soils

The general soils of this WSA are high mountain stony and gravelly loams with basically no existing accelerated erosion problems. Slopes vary from 4 to 70 percent with most averaging 30 percent. Erosion condition was determined by using soil surface factors, as summarized in Table 2 (terms are defined in the glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	0	0	0
Moderate	1.3	3,000	15	3,900
Slight	0.6	15,000	75	9,000
Stable	0.3	2,000	10	600
Total		20,000	100	13,500

Sources: USDI, BLM, 1982c; and Leifeste, 1978.

Vegetation

Existing vegetation types are summarized on Table 3. Existing vegetation consists of big sagebrush and pinyon-juniper vegetation at the lower elevations on the south slopes. On the cooler north slopes, there are ponderosa pine, Douglas fir, and bristlecone pine trees. The Henry Mountains are now considered the southeast limit for the Great Basin variety of bristlecone pine. The Mt. Hillers WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler Ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) types of the WSA are listed on Table 4. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
MT. HILLERS WSA

Resource	No Action	Alternatives	
		All Wilderness (20,000 Acres)	Partial Wilderness Designation (17,000 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 1,000 tons of uranium oxide, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper	Oil and gas likely would not be recovered. Assuming a worst-case analysis, the recovery of locatable minerals would also be foregone. Due to the low likelihood of recovery, however, the loss of development opportunity would not be significant.	Although likelihood is low, up to 1 million barrels of oil, 5 billion cubic feet of natural gas, 150 tons of uranium oxide, 4 tons of gold, 75 tons of silver, and 7,500 tons of copper could be recovered.
Wildlife	About 1 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.	Wildlife in the designated area would benefit from solitude. About 1.2 percent of the nondesignated portion could be disturbed by mineral and energy exploration and development, which could adversely affect wildlife habitat.
Livestock	Grazing of 240 AUMs and maintenance of developments (currently there are none) would continue. New developments could be implemented; however, none are now proposed.	Grazing of 240 AUMs and maintenance of developments would continue. Little effect on grazing management is expected. Proposed new developments might not be allowed.	Effects would be about the same as for the All Wilderness Alternative.
Visual Resources	The quality of visual resources could be impaired on up to 200 acres.	Visual quality could be impaired on up to 40 acres.	Visual quality could be impaired on up to 70 acres, including 33 acres in the designated portion. All of the Class A scenery would be within the designated portion and would be protected by the reduced potential for disturbance.
Recreation	ORV use would continue on 3.5 miles of ways at current low levels. Overall recreational use could increase from the present 40 visitor days per year to 60 over the next 20 years. Up to 200 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 3.5 miles of ways, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.	ORV use could continue on 2 miles of ways in the undesignated portion.

TABLE 1 (CONTINUED)
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
MT. HILLERS WSA

Resource	Alternatives		
	No Action	All Wilderness (20,000 Acres)	Partial Wilderness Designation (17,000 Acres) (Proposed Action)
Wilderness Values	Wilderness values could be lost on up to 200 acres (1 percent of the WSA), but the values in the rest of the WSA would not be affected.	Wilderness values would be protected, except on up to 40 acres (less than 1 percent of the WSA) which may be disturbed by development of valid mineral rights.	Wilderness values would be protected, except on 33 acres which could be disturbed by development of valid existing rights. Additional impairment could be expected on 1.2 percent of the 3,000 acres not designated. Overall, wilderness values could be lost on up to 0.4 percent of the WSA. However, all of the areas meeting the standards for naturalness and outstanding opportunities for solitude and primitive recreation would be in the designated portion and would be protected by reduced potential for disturbance.
Land Use Plans and Controls	This alternative would be consistent with the <i>Garfield County Master Plan</i> , State of Utah plans and policies, and the current BLM Henry Mountain MFP.	This alternative would not be consistent with Garfield County's concept of multiple use. It would be consistent with State policy if lands were exchanged. Designation would constitute an amendment of the BLM Henry Mountain MFP.	Partial designation would be the same as the All Wilderness Alternative, except that the portion not designated would be consistent with Garfield County's plans.
Socio-economics	Annual local sales of less than \$43,464 and Federal revenues of up to \$60,336 would continue.	Annual local sales of less than \$43,464 and Federal revenues of up to \$336 would continue, but Federal revenues of up to \$60,000 from mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.	The effects of this alternative would be the same as for the All Wilderness Alternative, except that annual Federal revenues would be reduced by up to \$51,000.

TABLE 3
Existing Vegetation Types

Existing Vegetation Types	Acres	Percent of WSA
Pinyon	5,625	28
Big sage	4,400	22
Douglas fir, aspen	3,585	18
Rock, badlands	3,000	15
Pine	190	1
Grasses and Shrubs	3,200	16

Source: USDI, BLM, 1982c

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Arizona pine forest	3,000	15
Juniper-pinyon woodland	15,000	75
Spruce, fir, douglas fir	2,000	10

Source: USDI, Geological Survey, 1978.

There are no identified threatened, endangered, or sensitive plant species in the WSA. There are approximately 12 acres of riparian-type vegetation within the WSA. Because it is a small type that crosses through other larger vegetation types, it is not identified individually in Table 3.

Water Resources

This area is the headwaters of several streams including Copper Creek (1 mile), Benson Creek (0.50 mile), and Gold Creek (1.50 mile). The WSA is the recharge recovery area for three springs: Hole Spring, Starr Spring, and Lower Starr Spring (located on the boundary of the WSA). There is little potential for wells or underground water use. Water quality is probably good but treatment is necessary for human consumption.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy (DOE), had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in the WSA is moderate, due to a marginally favorable geologic environment. An overall importance rating (OIR) of 3 was assigned to the Mt. Hillers WSA by SAI (1982). The OIR is given on a scale of 1 to 4 where

4 is equated with high mineral importance. Shades of importance are indicated by + or -. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

The SAI rating is given for 25 to 50 percent of the Mt. Hillers WSA. Seven of the eight resources were assigned favorabilities of f2 or less, with one, uranium resources, being f3. The energy and mineral resource rating summary is given in Table 5.

TABLE 5
Energy and Mineral Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels; less than 60 million cubic ft.
Uranium	f3	c3	500-1,000 tons of uranium oxide
Coal	f2	c2	Small tonnages
Geothermal	f1	c3	None
Hydroelectric	f1	c4	None
Gold	f2	c2	Less than 25 tons
Silver	f2	c2	Less than 500 tons
Copper	f2	c2	Less than 50,000 tons contained

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of Mines in an independent mineral investigation report for the WSA. This report will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider this report prior to making wilderness recommendations.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but are not found or produced in the United States in sufficient quantities to meet such a need. The WSA

could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver would be present in the WSA in only small amounts.

LEASABLE MINERALS

There are no known deposits of leasable minerals in the WSA being actively drilled or explored. None of the leases show evidence of commercial quantities, nor is any evidence expected prior to designation.

Oil and Gas

Approximately 10 million barrels of in-place oil (3 million estimated recoverable) or 60 billion cubic feet of natural gas (18 million cubic feet estimated recoverable) could occur within the WSA. Refer to Appendix 6 for an explanation of recoverability estimates.

All 20,000 acres of the Mt. Hillers WSA are under post-FLPMA oil and gas leases. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

About 16,319 acres of the WSA are within Category 1 (open to leasing with standard stipulations) and the remaining 3,681 acres are within Category 2 (open with special stipulations).

Coal

A small tonnage of coal may be present within the WSA; however, if present, it would be considered uneconomic to recover.

LOCATABLE MINERALS

Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation. After designation, all other lands (including claims not determined valid) within wilderness would be closed to prospecting and exploration (USDI, BLM, 1983c).

There are 385 claims existing in the WSA, covering approximately 7,488 acres. The majority of these claims are located in the northern, southeastern and southwestern portions of the WSA.

There are no known commercial deposits of locatable minerals in the Mt. Hillers WSA. No claim is currently producing commercial quantities.

Uranium

There is a geologic possibility (f3/c3) for the occurrence of uranium in the northeastern part of the WSA where the Morrison Formation is found. The formation consists of two members (Salt Wash and Brushy Basin) and ore deposits in this formation are chiefly tabular or lenticular, occurring in the Channel Sands of the Salt Wash Member. The ore was deposited when the ore-bearing solution entered a reducing environment. Ore bodies in this formation are expected to be scattered and small (500 to 1,000 tons), with the recoverability of this resource being unknown.

Gold, Copper, and Silver

There are known deposits of gold, copper, and silver in the WSA. These deposits are currently subeconomical to develop due to their limited extent and quality. There is no active exploration or mining within the WSA. Possibilities for finding additional deposits of these minerals are considered high but quantities would probably be low.

SALABLE MINERALS

With the exception of sand and gravel, there are no known or possible occurrences of salable minerals in the WSA. The granitic intrusives of Mt. Hillers provide a good source of aggregate. There are currently no salable minerals of any type

being removed from the WSA. The two potential markets, Hanksville and Ticaboo, are very small and meet their needs from sources closer than Mt. Hillers.

Wildlife

Animals in the WSA include mule deer, rabbit, squirrel, coyote, fox, and pika. Several species of birds are found along the water courses. No threatened, endangered, or sensitive wildlife species are known to inhabit this WSA, nor has crucial habitat been identified.

The WSA contains the following identified big game ranges: 3,250 acres of high priority deer summer range, 16,750 acres of crucial critical deer summer range, and 16,750 acres of limited value bison yearlong range. Current population estimates are 52 deer and about 20 bison within the WSA. The mountain is potential critical year-long range for desert bighorn sheep if they become established in the area. Currently, there are no plans to transplant desert bighorn sheep into the WSA.

There are no wildlife management facilities in the WSA nor are there plans to develop any facilities or manipulate any habitat.

Forest Resources

Timber acreage in this WSA includes approximately 85 acres of aspen, 3,500 acres of Douglas fir and mixed conifers, and 190 acres of ponderosa pine. All of the potential commercial timber acreage is on slopes in excess of 40 percent and, therefore, considered unharvestable. Limited access, low volumes, distance from market, and low demand also make commercial harvest unlikely. The current management plan for the area recommends that there be no commercial timber sales. This recommendation was made to assist in preserving watershed, wildlife, and other resource values. There is no known present harvest of woodland products (poss, firewood, etc.).

Livestock and Wild Horses/Burros

Most of the WSA is too steep and rocky for livestock use. Limited livestock use within the WSA occurs along the lower benches of Mt. Hillers. As shown in Table 6, portions of four allotments are permitted for an estimated 240 AUMs in the WSA. This represents 2 percent of the AUMs of the four allotments involved. No acreages within the WSA

have been identified for vegetation manipulation for livestock benefits. There are no existing range improvements in the WSA.

There are no wild horses or burros inhabiting this WSA.

TABLE 6
Livestock Grazing Use Data

Allotment	Season of Use	Number of Livestock	Number of Permittees	Number of AUMs in WSA
Pennell	6/1 to 10/31	490 cattle	3	93
		200 sheep	1	
Trachyte	11/1 to 5/31	300 cattle	2	67
		1,060 sheep	1	
Rockies	11/1 to 5/31	834 cattle	8	53
		1,300 sheep	1	
Bullfrog	11/1 to 5/31	440 cattle	4	27
	12/1 to 1/15	1,075 sheep	1	
Total				240

Source: USDI, BLM, 1982c.

Visual Resources

Scenic values are exceptional throughout the WSA. The high relief and variety of vegetation provide a strong contrast to the surrounding deserts and badlands. The north side is visible (background visual distance zone is greater than 5 miles) from U-95. The east side of the WSA is visible from U-276, and the west and south sides are visible from secondary travel routes all within the foreground-middleground visual distance zone (less than 5 miles). The BLM Visual Resource Evaluation System rating for the WSA's visual characteristics is shown in Table 7. (Appendix 7 explains the BLM's VRM system.)

TABLE 7
VRM Ratings

Element	Acres	Percent of WSA
Scenic Quality		
Class A	16,608	83
Class B	3,392	17
Class C	0	0
Management Class		
Class I	0	0
Class II	19,235	96
Class III	291	1
Class IV	474	3

Source: USDI, BLM, 1982c.

Cultural Resources

There are 20 archaeological sites (campsites and chipping sites) recorded in the WSA. None of these sites is listed on or eligible for listing on the National Register of Historic Places.

Starr Ranch, located adjacent to the southeast side of the WSA, is listed on the National Register. Three archaeological sites at Starr Springs, also southeast of the WSA, are eligible for National Register nomination.

The WSA has a moderate potential for the discovery of additional sites, primarily on the lower elevations near springs.

Recreation

A variety of recreational opportunities were identified within the WSA. These include dayhiking, geologic sightseeing, general sightseeing, backpacking, camping, nature study, and photography.

The WSA offers an outstanding opportunity for day hiking due to good access points and challenging terrain. Approximately 18 miles of hiking routes exist within the WSA; however, the overnight backpacker and camper may be restricted to shorter trips due to the configuration and size of the area that can be hiked.

The Pink Cliffs on the south side of Mt. Hillers are an outstanding site for geologic study. The area is easily accessible and dramatically illustrates the geologic forces that formed the Henry Mountains. There are also excellent scenic vistas from atop Mt. Hillers, including views of Lake Powell, the Little Rockies, and Mt. Pennell.

Based on field observations, current visitor use for the activities above is estimated at 40 visitor days a year, mainly from hunting. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980. The following species account for the listed visitor days related to hunting within the Henry Mountain Resource Area: bison, 175 days; deer, 342 days; and upland game, 1,106 days. There is little if any ORV use in the area due to the rugged terrain. The 3.50 miles of existing vehicular ways may be used for hunting or other types of recreation access.

Wilderness Values**SIZE**

The Mt. Hillers WSA is approximately 20,000 acres in size. It is about 7 miles long, north to south, and 7 miles wide at its widest point.

NATURALNESS

About 19,000 acres of this WSA are in a natural condition. On the other 1,000 acres, there are approximately 3.50 miles of ways. These ways are in the Cass Creek Peak area, north of Big Ridge, and at Ghost Ridge. The way at Ghost Ridge could be rehabilitated by natural processes. The ways are substantially unnoticeable.

SOLITUDE

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds.

The WSA consists of a large central peak with several prominent satellite peaks radiating away from the center on large ridges. These ridges are separated by at least 10 drainages reaching far up the mountain. Most of these are irregular in shape. On the mountain top, there is room for several groups to occupy proximate areas and be unaware of each other. Thick stands of spruce, fir, pine, and mountain mahogany on the north slope further screen users from each other.

Feelings of solitude and isolation are further enhanced by the size and configuration of the WSA and the vistas of central Utah at the summit. Due to distance, topography, and vegetation, few, if any, marks of man are visible. One exception is the wildlife chaining projects on Coyote Benches outside the WSA.

Overall, the quality of the opportunities for solitude are outstanding (15,630 acres), except on about 4,370 acres on the lower benchlands where there is limited topographic and vegetative screening.

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive, unconfined recreation were evaluated by considering miles of potential hiking routes in relation to the WSA's size, the number of recreational opportunities present, and the quality of these opportunities.

Due to vegetation and topographic constraints, Mt. Hillers offers a limited number of recreational opportunities. As discussed in the Recreation section, hiking opportunities are particularly challenging, with the summit of Mt. Hillers being the most difficult to reach in the Henry Mountains.

The overall quality of the opportunities for primitive, unconfined recreation are outstanding on

15,630 acres of the WSA. Portions of the WSA along the lower benchlands offer limited opportunities on approximately 4,370 acres.

SPECIAL FEATURES

There is an excellent example of the geologic forces which formed the Henry Mountains on the south side of Mt. Hillers at Pink Cliffs. Mt. Hillers is clearly visible from U-276 and nearby developed campground at Starr Springs. Special features are, therefore, considered geological and scenic and include scenic views, a stand of old bristlecone pine trees, and geologic formations of stocks and laccoliths.

Mt. Hillers, a laccolith, is a huge structural dome (5-6 miles across) cut by several radial narrow, steep, V-shaped valleys separated by elongated, jagged ridges. Dip slopes and hogbacks formed from upturned sedimentary rocks (vertical in the Pink Cliffs area) flank the mountain.

Land Use Plans and Controls

There are no rights-of-way, private land, or subsurface rights within the WSA. There is one State section within the boundaries of the WSA and an additional six adjacent State sections. The management philosophy for all State sections is to maximize economic returns for the State School Fund. No activities are currently occurring on these sections. They are under lease for oil, gas, and grazing. Up to 300 building sites on a State section west of the WSA may be developed for private homes in the future.

The *Garfield County, Utah, Master Plan* (Five County Association of Governments, 1984) covers this WSA. The Master Plan recognizes that the county possesses "... some of the most spectacular scenery in the United States. . . . The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service unit be recommended for wilderness. The plan recommends that the remaining lands within the county, including the Mt. Hillers WSA, be retained for multiple uses. According to the plan, multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The WSA is managed under the BLM Henry Mountain Planning Area MFP (USDI, BLM, 1974) which generally allows for multiple use as described in the No Action Alternative. The Henry

Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Socioeconomics

DEMOGRAPHICS

The WSA lies within Garfield County, one of Utah's least populated and most rural counties. In 1980, the Garfield County population was 3,673, reflecting a population density of 0.71 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1981 and University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Ticaboo, about 18 miles south, also in Garfield County. Ticaboo had a 1980 population of about 300. Since 1980, the population has declined to between 150 and 200. Hanksville, a small community of approximately 351 people, located about 30 miles to the north in Wayne County, and Green River, approximately 95 road miles north of the WSA in Emery County, are the main gateway and service areas for visitors to the Mt. Hillers area.

EMPLOYMENT

Garfield County is one of the poorest counties in the State of Utah (South et al., 1983). Table 8 indicates 1980 employment sectors for the county. Government is the largest employment sector within the county and represents 21 percent of the work force followed by construction, services, manufacturing, and agriculture (refer to Table 8). The county, however, maintains a diversified economic base (South et al., 1983). The Town of Escalante relies on farming, stockraising, and lumbering, supplemented by tourism, some oil production, and government employment (South et al., 1983). Another town, Boulder continues to rely on agriculture.

INCOME AND REVENUES

In Garfield County, the nonfarm industry sector in 1980 produced over 96 percent of total labor and proprietor income representing an annual growth rate of 22.2 percent (University of Utah Bureau of Economic and Business Research, 1982) (refer to Table 9). Almost 80 percent of this income came from the private sector, principally mining, construction, and manufacturing, while government sources produced 20 percent of personal income and earnings for the county. Farming produced 3.8 percent of the county's total personal income, amounting to \$949,000.

TABLE 8
1980 Employment
Garfield County, Utah

Industrial Sector	Number	Percent
Agriculture	236	11
Mining	210	10
Construction	379	17
Manufacturing	248	11
Transportation, Communication, and Utilities	85	4
Wholesale and Retail Trade	125	6
Finance, Insurance and Real Estate	16	1
Services	266	12
Government	457	21
Nonfarm Proprietors	157	7
Total	2,179	100

Sources: Utah Department of Employment Security, 1980,
and USDC, Bureau of Economic Analysis, 1982.

TABLE 9
1980 Personal Income and Earnings
Garfield County, Utah

Type/Source	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietor's Income (Earnings)	24,792	21.9
Total Labor and Proprietor's Income by Industry Source		
Farm	949	16.6
Nonfarm	23,843	22.2
Private	19,049	26.5
Agriculture	79	(D)
Service and Other		
Mining	4,222	47.0
Construction	5,536	66.5
Manufacturing	3,294	14.2
Transportation and Public Utilities	1,545	16.8
Wholesale Trade	96	1.3
Retail Trade	1,302	7.6
Finance, Insurance and Real Estate	189	(D)
Services	2,786	16.3
Government	4,794	10.8

Sources: USDC, Bureau of Economic Analysis, 1982, and
University of Utah, Bureau of Economic and Business
Research, 1982.

(D) Not shown to avoid disclosure of confidential informa-
tion or for items \$50,000 or less. Data are included in totals.

Economic-related activities in the WSA include
mineral claims, livestock production, and recrea-
tion. Table 10 summarizes local sales and Federal

revenues from the WSA. Appendix 9 identifies the
multipliers used to estimate sales and revenues.

TABLE 10
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Mining Claim Assessment	Less than \$38,500	None
Oil and Gas Leases and Production	None	\$60,000
Livestock Grazing	\$4,800	\$336
Recreational Use	Less than \$164	Unknown ²
Total	Less than \$43,464	\$60,336

Sources: BLM Files; Appendix 9.

¹Local sales represent money potentially spent. They do not
account for the total income that would be generated by
these expenditures.

²A few commercial permits have been issued since 1980.

The WSA has 385 mining claims. Regulations
requires a \$100 annual expenditure per claim for
labor and improvements, an undetermined part of
which is spent in the local economy. No oil and
gas or mineral production has occurred in the
WSA. Therefore, mineral and energy resource
production from the WSA has not contributed to
local employment or income.

Twenty-one livestock operators have a total graz-
ing privilege of 240 AUMs within the WSA. If all
this forage were utilized, it would account for
\$4,800 of livestock sales and \$1,200 of ranchers'
returns to labor and investment.

No woodland products are harvested from the
WSA; therefore, woodland harvest does not con-
tribute to the local economy.

The WSA's recreational use is low. Related local
expenditures are low and are insignificant to both
the local economy and individual businesses.
The actual amount of income generated locally
from recreational use in the WSA is unknown.
However, an approximate range of expenditures
can be deduced from Dalton (1982). This study
indicates that statewide average expenditures
per recreational visitor day for all types of recrea-
tion in Utah are approximately \$4.10. The recrea-
tional use for Mt. Hillers WSA is estimated as
about 40 visitors per year. Only a portion of the
expenditures for recreational use of the WSA
contribute to the local economy of Wayne and
Garfield Counties.

The WSA generates Federal revenues from mineral leases and claims and livestock (refer to Table 10).

Oil and gas leases in the WSA cover the entire 20,000 acres. At \$3 per acre, lease rental fees generate up to \$60,000 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 240 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$336 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as cited in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.

5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.

6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major changes that could occur in the area (although the likelihood is thought to be low) would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is unknown but would probably be relatively low due to the WSA's rough terrain and limited resource potential. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and would cause the following surface disturbance: uranium and associated minerals, 40 acres; oil and gas, 160 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. Disturbance of 200 acres would result in only minor increases in fugitive dust emissions. Because no major sources of air pollutant emissions are proposed in the vicinity of the WSA, air quality would remain essentially as at present.

GEOLOGY

No impacts to geology are expected because surface disturbances associated with locatable minerals (i.e., uranium, copper, gold, and silver) and oil and gas exploration and development activities would probably not exceed 200 acres. This would not significantly affect geology.

SOILS

It is estimated that up to 200 acres of soil could be disturbed by mineral exploration and develop-

ment. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 200 acres disturbed would increase from 260 cubic yards/year to 540 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 280 cubic yards (2.1 percent) over current annual soil loss.

VEGETATION

The anticipated maximum disturbance of 200 acres would not result in a major change in any vegetation type but could result in a loss of important groundcover or wildlife habitat if located in areas of dense vegetation, critical slopes, or within riparian vegetation areas. The probability of surface disturbance is low due to rough terrain and economic constraints for development.

WATER RESOURCES

The WSA contains headwaters of several streams and is a recharge recovery area for three springs. Depending on the location of 200 acres of disturbance (10 percent of the surface of the WSA), short-term increases in total dissolved solids (TDS) and sediment load of these streams could result. Over the long term, no significant sedimentation or change in TDS would result from an increase of 280 cubic yards of annual soil loss due to this disturbance.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

There is a potential for up to 10 million barrels of in-place oil or up to 60 billion cubic feet of natural gas in the WSA. About 3 million barrels of oil or 18 billion cubic feet of natural gas would be recoverable. These oil and gas resources could be explored and developed, subject to Category 1 (16,319 acres) and Category 2 (3,681 acres) stipulations and would not be affected by the adoption of this alternative. Approximately 160 acres of surface disturbance would take place if exploration and development were to occur. However, due to the small size and scattered distribution of these deposits, production is not expected under this alternative.

Locatable Minerals

Locatable mineral exploration and development could occur within the WSA. The entire WSA would remain open to mining claim location. The potential deposits of up to 1,000 tons of uranium, 50,000 tons of copper, 25 tons of gold, and 500 tons of silver estimated to be in-place could be developed. Approximately 40 acres could be disturbed due to exploration and development of these locatable mineral resources. The likelihood of development, however, is thought to be low because of rough terrain and economic considerations (e.g., transportation, environmental constraints, etc.).

WILDLIFE

Under this alternative, 16,750 acres of crucial deer summer range would not be protected by the application of the "Wilderness Management Policy" and the reduced likelihood for surface-disturbing and other activities. In addition, 200 acres of crucial mule deer summer range and limited value bison yearlong range could be subject to surface-disturbing activities. This acreage represents approximately 1 percent of the total crucial deer range within the WSA. The current deer population in the WSA is estimated at 52 animals (USDI, BLM, 1983b). Assuming that deer are evenly distributed throughout the WSA, the carrying capacity for deer would be reduced by approximately one animal.

The current number of bison utilizing the WSA is estimated at 20 animals (USDI, BLM 1983b). Based on the assumption that bison are evenly distributed throughout this range and that all surface disturbance would occur on this area, the loss of 200 acres from surface disturbance and other activities would reduce the carrying capacity for the bison population by one animal within the WSA.

Wildlife could be positively affected by an increase in the availability of water and forage due to the construction and maintenance of water catchments, reservoirs, springs, and vegetation manipulations. There are no developments within the WSA and none have been planned in the current MFP.

FOREST RESOURCES

The potential commercial timber acreage within the WSA is on slopes in excess of 40 percent and, therefore, considered unharvestable. Minimal

surface-disturbing activities are anticipated and no loss or harvest of forest resources are expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 240 AUMs currently allocated in the WSA are controlled by 21 livestock permittees. There would be no changes in or effect on current livestock use and management under this alternative. Additional roads or other facilities for livestock management could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are currently used very little to manage livestock in the WSA and no livestock management facilities are proposed, few, if any, changes in livestock management techniques are expected. Mineral-related disturbance could result in a short-term loss of livestock forage.

VISUAL RESOURCES

Visual values in areas affected by the estimated 200 acres of surface disturbance from mineral and energy exploration and development would have to be considered within the VRM class objectives of the MFP. These include Class II, III, and IV areas. Even though mitigative measures would be applied to minimize visual contrast created by intrusions, visual quality would be degraded in localized areas during the period of activity. VRM objectives would probably not be met in Class II areas during the short term but would probably be met in the Class III and IV areas. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole.

CULTURAL RESOURCES

Disturbance of 200 acres by mineral and energy exploration and development under this alternative could affect cultural values in the WSA. Inadvertent loss or damage could occur in the disturbed area. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance, thus mitigating impacts.

The overall effect on cultural resources is unknown; however, based on the experience of the BLM, it would be small. Vandalism (not currently a problem) would increase in proportion to the general population increase.

RECREATION

The quality of the user's primitive recreational experience would be reduced by up to 200 acres of possible disturbance by mineral and energy activities. The outstanding opportunities for day hiking, geologic study, and general sightseeing could be negatively affected. If roads, vehicular ways, and drill pads are located throughout the WSA (worst-case analysis), primitive recreational opportunities could be lost in the area altogether. However, roads and ways created for energy and mineral development would improve access into the area for nonprimitive recreation.

The future trend in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 40 current visitor days to 60 at the end of 20 years, mainly for hunting activities. Hunting could be supported by motorized vehicles based on the 3.50 miles of ways in the WSA, although the ways are presently used little if at all for ORV travel.

WILDERNESS VALUES

None of the area would be designated wilderness, and management would be under the existing Henry Mountain Planning Area MFP. Expected mineral and energy exploration and development could disturb an estimated 200 acres. Wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) could be lost or diminished in affected areas. The impacts to these values, however, probably would not be significant due to the limited surface disturbance anticipated.

The 200 acres of mineral-related disturbance could result in a significant loss of naturalness and solitude in the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area. The potential for energy and mineral development and related disturbance is low within this WSA.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the general policy of multiple resource use reflected in the *Garfield County Master Plan*. The plan supports multiple use of the Mt. Hillers WSA.

This alternative (No Action) is based on implementation of the current BLM Henry Mountain

MFP and is, therefore, in conformance with it. The No Action Alternative would also be consistent with the State of Utah's plans and policies as cited in their input and review of the MFP.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. A portion of the \$100 per year assessment fee required for each mining claim would reach the local economy. If the oil and gas and uranium potentials in the WSA were developed it would lead to increases in population, employment, and income for Garfield and Wayne Counties. However, the probability of economic development of minerals within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (240 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The 240 AUMs of forage use in the WSA would continue to produce \$4,800 annually in livestock sales and \$1,200 of ranchers' returns to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is projected to increase only 20 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 20,000 acres in the WSA, all open to oil and gas lease, that would continue to bring up to \$60,000 annually in Federal lease fee revenues. In addition, new royalties from lease production could be collected by the Federal government if oil and gas were discovered. Half of these monies would be allocated to the state, a portion of which could reach the local economy.

Collection of livestock grazing fees (\$336 per year) would continue. About 50 percent of livestock grazing fees are returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (20,000 Acres)

As noted in the Description of the Alternatives section, the major changes that could occur in the 20,000-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 3.50 miles of existing vehicular ways in the WSA would be closed to vehicular use, except for approval by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis, it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities. Oil and gas leases would not be renewed and future leasing would not be allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA.

Because potentially disturbed areas would be smaller than under the No Action Alternative (40 vs. 200 acres), the impacts from development and surface disturbance on air quality, geology, vegetation, water, forest, and cultural resources would be insignificant for the All Wilderness Alternative, as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

SOILS

The soil resource could benefit from this alternative because of the reduced likelihood of surface-disturbing activities.

Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 40 acres disturbed would increase from 52 cubic yards/year to 108 cubic yards/year. Soil loss, however, would decrease as reclamation occurred. The time for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual increase in soil loss from surface disturbance in the WSA would be approximately 56 cubic yards (0.42 percent). This would be 224 cubic yards per year less than under the No Action Alternative.

WATER RESOURCES

Additional improvements or expansion of existing waters could not occur.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Exploration for and development of a potential resource of up to 10 million barrels of oil in-place or less than 60 billion cubic feet of natural gas (3 million barrels of oil or 18 billion cubic feet of natural gas recoverable) could be foregone under this alternative.

Approximately 20,000 acres are under oil and gas leases (all dated post-FLPMA). No exploration or development of oil and gas is presently occurring within the WSA. Existing leases could be developed subject to the stipulations issued at the time of leasing. It is unlikely, however, that existing leases will be developed or that a showing of commercial quantities will be made prior to their expiration dates. Expired leases will not be reissued.

Due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in any significant impacts to the oil and gas resource.

Locatable Minerals

Up to 1,000 tons of uranium, 50,000 tons of copper, 25 tons of gold, and 500 tons of silver could occur in the WSA. There are approximately 7,488 acres under mining claims (385 claims) within the WSA. Development work, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. If minerals are located prior to wilderness designation, it is estimated that up to 40 acres could be disturbed due to exploration and development of the locatable mineral resources, primarily uranium. The worst-case impact to minerals would be if the potentially recoverable minerals are not within mining claims filed before designation. In that case the potential for recovery of up to 1,000 tons of uranium, 50,000 tons of copper, 25 tons of gold, and 500 tons of silver would be foregone. After that date, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Because production of these minerals is not currently occurring and economic considerations

are unfavorable, it is unlikely that exploration or development would occur even without wilderness designation. Therefore, this alternative would probably not result in any significant loss of recoverable uranium and associated mineral resources.

WILDLIFE

Under this alternative, some wildlife could benefit due to the preservation of solitude and naturalness. Forty acres of crucial deer range could still be subject to surface disturbance associated with potential energy and mineral exploration and development. This acreage represents less than 1 percent of the total crucial deer range within the WSA.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Henry Mountain Planning Area MFP. The 240 AUMs currently allocated in the WSA are controlled by 21 livestock permittees.

New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, development of future roads or other livestock management facilities for use with the 240 AUMs in the WSA could be restricted to preserve wilderness values. Because no improvements have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected. Wilderness designation could reduce the short-term loss of livestock forage due to mineral and energy development.

VISUAL RESOURCES

A slight benefit would occur to the exceptional visual resources of the WSA because the VRM class would change from Classes II, III, and IV to Class I. That class generally allows only natural ecological changes and, therefore, would reduce the potential for surface-disturbing activities to about 40 acres.

Although mitigating measures would be applied to reduce visual contrast created by mineral-related surface disturbance, visual quality would be degraded and VRM Class I management objectives would not be met during the short term on disturbed areas. Even after rehabilitation, some permanent localized degradation could be expected. If roads for development of valid mining

claims (worst-case analysis) could not be denied, VRM Class I objectives might not be met on large portions of the WSA. Because the potential for development of mining claims is low, visual quality would probably not be reduced in the WSA as a whole.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. Protection afforded by wilderness management, however, would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Although use is currently low (about 40 visitor days per year), the WSA has outstanding primitive recreational values. If designated, the outstanding opportunities for day hiking, geologic study, and general sightseeing would be recognized, managed, and preserved. Recreation use has been fairly consistent. As discussed for the No Action Alternative, recreational use is expected to increase gradually (2 percent yearly) in response to statewide population increases and current trends in recreational use. Publicity of the WSA likely following wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use and the quality of the primitive recreation experience probably would not be negatively affected by the increased use.

Mineral-related surface disturbance on up to 40 acres could cause localized impairment of values. If roads for development of valid mining claims could not be denied, the quality of primitive recreational opportunities would be reduced. Because the potential for mineral production is low and wilderness designation would reduce the potential for surface disturbance, the quality of the primitive recreational experience would likely be preserved throughout the area.

Little impact on ORV recreational use would be expected due to the lack of such activity in the area; however, approximately 3.50 miles of ways within the WSA would be closed to potential ORV use for hunting.

It is concluded that this alternative could benefit recreation by reducing the likelihood for surface-disturbing activities and increasing management attention and recognition of recreational values.

WILDERNESS VALUES

Under wilderness designation, the potential for surface-disturbing activities impairing to wilderness values would be reduced through management under VRM Class I (which generally allows for only natural ecological change), ORV closure, and closure of the entire area to future mineral leasing and location.

No development of leases on the designated portion is foreseen under this alternative. The possible mineral-related surface disturbance would therefore be reduced from 200 acres to 40 acres for development of valid mining claims. Mitigation to protect wilderness values would be considered during mining claim development, but road construction and use of motorized equipment could be allowed for development of valid mining claims if there are no reasonable alternatives. Because the potential for economically feasible mineral development is low, mineral-related disturbance (including access) would eliminate solitude, naturalness, and the opportunity for primitive and unconfined recreation on the affected areas but would not reduce these values in the area as a whole. Because the potential for mineral production is low and mitigation would be imposed to protect wilderness values, loss of these values under wilderness designation would be less likely than under the No Action Alternative.

Designation and management of all 20,000 acres as wilderness would, therefore, contribute to the preservation of the wilderness values of size, naturalness (19,000 acres), and outstanding opportunities for solitude and primitive and unconfined recreation (15,630 acres). The special features in this WSA (geologic and scenic) would also be protected and preserved.

Outstanding opportunities for several recreational activities (day hiking, geologic study, and sightseeing) would be preserved. Although recreation use could increase (refer to Recreation section), use would be managed and, relative to the size of the area, would be low. Thus, no significant effect on solitude and recreational values would be expected.

LAND USE PLANS AND CONTROLS

The existing BLM Henry Mountain MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Henry Mountain MFP.

The *Garfield County Master Plan* recommends multiple use of public lands in the WSA. This alternative is generally consistent with the multiple-use concept since most resource uses would continue although under more restrictive conditions. This alternative would conflict with the county's multiple-use concept because restrictive conditions would be placed on mineral development and oil and gas leases would be phased out.

If State lands within the WSA are exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource use in the WSA (refer to Table 10) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation. However, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$4,800 annually of livestock sales and \$1,200 of ranchers' returns to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 20,000 acres now leased would cause an eventual loss of up to \$60,000 per year of lease fees to the Federal treasury. In addition to these lease fees, any potential royalties from new lease production could be foregone.

Recreation-related Federal revenues could increase if the demand for commercial outfitter services increase. Presently no commercial outfitters use the WSA on a regular basis.

Partial Wilderness Alternative (17,000 Acres) (Proposed Action)

The major activities that would occur in the designated portion of the WSA under this alternative are the same as described for the All Wilderness Alternative. For the nondesignated portion, management would be as described for the No Action Alternative. The specific actions that would take place within the 17,000-acre area designated as wilderness and the 3,000 acres nondesignated are identified in the Description of the Alternatives section.

It is assumed that in the designated area some of the existing mining claims would eventually be explored and developed, causing 33 acres of disturbance. It is also assumed that existing oil and gas leases in the designated portion would expire before production of commercial quantities and would not be renewed.

Within the nondesignated area, it is assumed that 37 acres would be disturbed sometime in the future due to mineral and oil and gas exploration and development. Overall, 70 acres of surface disturbance would occur within the WSA; 130 acres less than under the No Action Alternative and 30 acres more than under the All Wilderness Alternative. Appendix 10 lists the surface disturbance assumptions and estimates for the WSA.

The analysis of the No Action Alternative, based on 200 acres of surface disturbance and development of locatable and leasable minerals within the WSA, shows that full development of potential resources with associated surface disturbance would not significantly affect air quality, geology, vegetation, water, forest, and cultural resources. Therefore, these resources would not be significantly affected under this partial designation alternative, projected to result in only 70 acres of surface disturbance.

Restrictions on management and development methods within the WSA would result in essentially the same impacts on development of water

resources, mineral and energy resources, wildlife, and land use plans as described for the All Wilderness Alternative. The following analysis describes the differences between the Partial Wilderness, the No Action, and the All Wilderness Alternatives.

SOILS

Soils within the designated portion of the WSA could benefit because of the reduced likelihood of surface-disturbing activities. Assuming that up to 33 acres of soil would be disturbed by mineral exploration in the area that would be designated wilderness, a 46.2 cubic yard annual increase in soil loss would occur. About 37 acres would be disturbed by mineral exploration and development in the area that would not be designated. Assuming that all disturbance would occur in areas with moderate erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 37 acres would increase 51.8 cubic yards/year, from 48.1 to 99.9 cubic yards/year. Soil loss would decrease as reclamation occurred; however, the time for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 98 cubic yards (0.7 percent) over current annual soil loss. This is 182 cubic yards less than under the No Action and 42 cubic yards more than under the All Wilderness Alternative.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The area that would be designated wilderness would be placed in Category 4 status with no leasing. There are approximately 17,000 acres of oil and gas leases in the area, all post-FLPMA in date. Activities on these leases would occur subject to the stipulations issued at the time of leasing.

It cannot be determined how much of the existing potential resource of 10 million barrels of in-place oil or less than 60 billion cubic feet of natural gas falls within the area that would be designated as wilderness under this alternative. Of these amounts, 3 million barrels of oil or 18 billion cubic feet of natural gas are estimated to be recoverable. Assuming that the loss of potential resource recovery would be in direct proportion to the size of the area designated, exploration and development of a potentially recoverable resource of up to 2 million barrels of oil or 13 billion cubic feet of natural gas could be foregone. This would allow

recovery of 1 million barrels of oil or 5 billion cubic feet of natural gas more than the All Wilderness Alternative.

It is concluded that, due to the small size of the potential deposits, the low certainty that they exist, and the low likelihood for exploration and development activities, this alternative is not expected to result in any significant loss in recovery of the oil or gas resource.

Locatable Minerals

It cannot be determined how much of the potential 1,000 tons of uranium, 50,000 tons of copper, 25 tons of gold, and 500 tons of silver in the WSA fall within the area that would be designated as wilderness under this alternative. Assuming that the locatable minerals are evenly distributed in the WSA and that the mineral deposits were not included in mining claims filed before designation, the potential for recovery of up to 850 tons of uranium, 42,500 tons of copper, 21 tons of gold, and 425 tons of silver would be foregone. There are 5,908 acres of mining claims within the area to be designated. Development work, extraction, and patenting could continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b).

Because these minerals are not being recovered within the WSA at present and because economic considerations (e.g., transportation, terrain, etc.) are unfavorable, it is not likely that exploration or development will occur. Therefore, this alternative would not prevent recovery of significant amounts of uranium and associated minerals.

LIVESTOCK

The effect of wilderness designation of 17,000 acres on domestic livestock grazing would be essentially the same as under the All Wilderness Alternative. Less than the 240 AUMs allocated would be within the designated portion of the WSA. Development of future roads or other livestock management facilities for use with allocated forage in the designated portion could be restricted to preserve wilderness values. Because no developments have been proposed in the WSA and motorized vehicles are used very little in livestock management, little effect on the management of livestock grazing is expected. As compared to the No Action Alternative, partial designation could reduce short term loss of livestock forage due to energy and mineral development.

VISUAL RESOURCES

Because the total surface disturbance would be 70 acres under this alternative as opposed to 200 acres under the No Action and 40 acres under All Wilderness, the impact on visual resources would be less than the No Action and slightly more than the All Wilderness Alternatives. In the portion recommended for designation, 33 acres of surface disturbance resulting from mineral exploration and development would cause localized long-term degradation of scenic values and could exceed VRM Class I management objectives. If roads for development of valid mining claims could not be denied (worst-case analysis), VRM Class I objectives might not be met on large portions of the designated area. Because the potential for development of mining claims is low, visual quality of the designated portion as a whole would probably not be reduced.

An additional 37 acres in the nondesignated portion of the WSA would be disturbed and probably would not meet VRM Class II objectives. Even though mitigative measures would be applied to minimize visual contrast, disturbance of a total of 70 acres within the WSA would result in localized long-term impairment of visual values.

RECREATION

Impacts to recreational values and opportunities for the 17,000-acre area that would be designated as wilderness would be as described in the All Wilderness Alternative and the quality of the primitive recreational experience would likely be preserved.

Little impact on ORV recreational use would be expected due to the current lack of such activity in the area; however, approximately 2 miles of ways within the WSA would be closed and 1.50 miles of ways would be open to ORV use. The ways are used little, if at all, for ORV use.

In the area that would not be designated (4,370 acres), little change in recreational use or opportunities is expected due to the limited recreational values.

WILDERNESS VALUES

Impacts on wilderness values would be the same as under the All Wilderness Alternative on 17,000 acres that would be designated wilderness. Size, naturalness, outstanding opportunities for solitude and primitive and unconfined recreation, and special features would be preserved. Although recreational use could increase (refer to Recreation section under All Wilderness Alternative), use would be managed and, relative to

the size of the area, would be low. Therefore, no significant effect on solitude and primitive recreation values would be expected. There would be some loss of wilderness values due to allowable surface disturbance from mineral exploration activities on up to 33 acres. Additionally, sights, sounds, and emissions of activities within and adjacent to the 3,000-acre area that would not be designated could result in the loss of solitude and primitive recreational values within the designated portion.

In the 3,000-acre area that would not be designated, there would be an expected 37 acres of surface disturbance from mineral and energy exploration and development activities. Those activities would degrade naturalness on 2,000 acres and opportunities for solitude and primitive and unconfined recreation (both found less than outstanding) on all 3,000 acres, from the commencement of activities through rehabilitation. Thus, slight long-term impairment of wilderness values in the portion that would not be designated would be expected.

LAND USE PLANS AND CONTROLS

This alternative would relate to land use plans as described for the All Wilderness Alternative, with the exception of the acreage not to be designated. On 3,000 acres, nondesignation would be consistent with the *Garfield County Master Plan* and State of Utah plans and policies. It would also be in conformance with the Henry Mountain Planning Area MFP.

SOCIOECONOMICS

With partial designation there would not be significant changes in current trends of population, employment, and local income distribution.

Because of restriction placed on the use of resources under partial wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource use in the WSA (refer to Table 10) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the 17,000-acre designated portion of the WSA. As with the All

Wilderness Alternative, precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low, it is estimated that potential mineral-related local income would not be significantly reduced by partial wilderness designation. However, any local income related to assessment of future mining claims on the 17,000-acre designated portion would be lost.

Livestock use and ranchers' income would continue as at present with \$4,800 annually of livestock sales and \$1,200 of ranchers' returns to labor and investment.

Increased public awareness of the area resulting from designation could increase nonmotorized recreation use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 17,000 acres now leased for oil and gas would cause an eventual loss of up to \$51,000 per year of lease fees to the Federal treasury. In addition to these lease fees, any potential royalties from new lease production on the 17,000-acre nondesignated portion of the WSA could contribute up to \$9,000 in Federal lease fees per year along with royalties if oil and gas are produced. Recreation-related Federal revenues could increase if the demand for commercial outfitter services increase. Presently no commercial outfitters use the WSA on a regular basis.

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Little Rockies WSA



LITTLE ROCKIES WSA

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LITTLE ROCKIES WSA

(UT-050-247)

INTRODUCTION

General Description of the Area

The Little Rockies Wilderness Study Area (WSA), which includes 38,700 acres of public land, is located in Garfield County, about 30 miles southeast of Hanksville on the southeast side of State Highways U-276 and U-95. It is also adjacent to Glen Canyon National Recreation Area (NRA). The WSA is considered part of the Henry Mountains and contains Mt. Ellsworth (8,235 feet) and Mt. Holmes (7,930 feet). Elevations in the WSA range from 4,000 feet to 8,235 feet. Mean annual precipitation ranges from 5 inches at the lower elevations to 15 inches at the higher elevations. Depending on elevation and season, temperatures range from -20 degrees Fahrenheit (F) to 95 degrees F.

The Little Rockies area was designated as a National Natural Landmark in 1975 for its outstanding geologic features. Principal uses of the area include wildlife habitat, mineral exploration, recreation, and livestock grazing.

The major vegetation types are pinyon-juniper and blackbrush.

Specific Issues Identified in Scoping

General issues pertaining to more than the Little Rockies WSA are discussed in Volume I. Issues and concerns specific to Little Rockies WSA raised in public scoping (USDI, BLM, 1984c) are responded to below:

1. *Comment:* The Environmental Impact Statement (EIS) should analyze needed soil and erosion control activities which could be in conflict with wilderness.

Response: The erosion condition of the WSA is analyzed in this document. No projects for erosion control have been planned for the WSA. The soils in the WSA range from sandy loams to rocky outcrops. Erosion in the area is considered natural, and no effective control measures have been identified or proposed.

2. *Comment:* The oil and gas potential of the WSA is ranked low by Science Applications, Inc. (SAI, 1982). Based on proprietary information, representatives of the oil and gas industry believe the potential of the WSA to be at least moderate. This information should be considered in the Draft EIS.

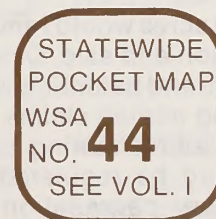
Response: At this time BLM has not made an independent assessment of geologic information gathered by oil and gas companies. The SAI (1982) report will be used as the reference on oil and gas potential for this EIS, but information provided by the oil and gas industry and available mineral investigation reports by the USDI, Geological Survey and Bureau of Mines will be reviewed by BLM prior to making final wilderness recommendations to the Secretary of the Interior.

3. *Comment:* Does this area have significant uranium potential?

Response: The uranium potential of the WSA and the effects that wilderness designation and nondesignation would have on development of the uranium resource are discussed under the Mineral and Energy Resources sections of this document. Recent uranium exploration and other geologic considerations indicate there may be commercial deposits of uranium within the WSA.

4. *Comment:* In regard to the WSA being adjacent to a potential wilderness area in Glen Canyon NRA: (1) Would designation of the WSA as wilderness benefit the values and uses of the adjacent proposed wilderness? (2) Would the WSA be a visible independent candidate for designation if Congress does not designate the contiguous lands? (3) Could the WSA be more effectively managed as wilderness if the management responsibility were transferred to the National Park Service (NPS)?

Response: The interrelationship between the WSA and adjacent proposed wilderness lands in Glen Canyon NRA is discussed under the Wilderness Values sections of this document. Both areas have wilderness character and could stand alone as wilderness as well as benefit from designation of the adjacent area. The WSA has no conflicts that would preclude its merit as wilderness by BLM.



DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated from Detailed Study

No alternatives were identified for this WSA during scoping other than those analyzed. Although a boundary adjustment would eliminate a direct conflict between wilderness values and mineral values in Four Mile Canyon, such an adjustment would effectively split the WSA in two, and BLM believes such an alternative is not realistic.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (38,700 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

NO ACTION ALTERNATIVE

Under this alternative, none of the 38,700-acre Little Rockies WSA would be designated by Congress as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Henry Mountain Planning Area Management Framework Plan (MFP) (USDI, BLM, 1982c). The approximately 1,920 acres of State land within the WSA (refer to Map 1) have not been identified in the MFP for special Federal acquisition through exchange or purchase.

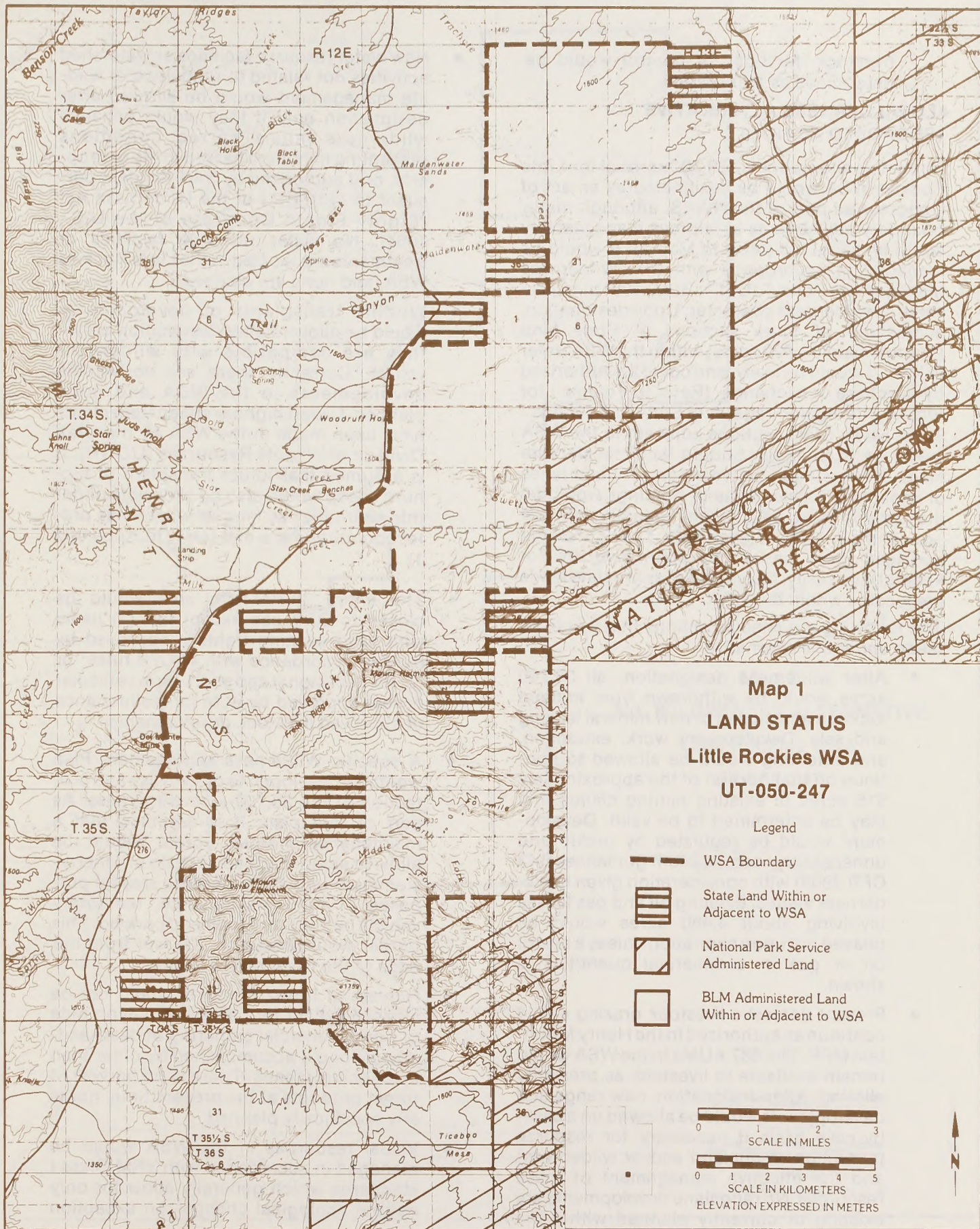
The following are specific actions that would take place under this alternative:

- The Little Rockies WSA would be designated as an Area of Critical Environmental Concern (ACEC). A detailed management plan would be prepared prior to implementing the ACEC. Also, much of the area would continue to be managed as a National Natural Landmark because of its national significance as a geologic feature.
- All 38,700 acres would remain open to mineral location and sale. Development work, extraction, and patenting would be allowed on existing mining claims (515 acres) and potential future mining claims. Development would be regulated by undue and unnecessary degradation guidelines (43 Code of Federal Regulations [CFR] 3809), without consideration for wilderness

values. Existing leases (4,480 acres) could be developed under Category 2 (standard and special stipulations) without concern for wilderness values. About 88 percent of the Little Rockies WSA (34,220 acres) has been closed to leasing (Category 4) to protect the scientific, wildlife, recreational, and geological values in the area. Implementation of the Henry Mountain MFP would continue the leasing restrictions, and no new oil and gas leases would be issued in that area.

- Domestic livestock grazing use of the WSA would continue as authorized in the Henry Mountain MFP (currently 687 Animal Unit Months [AUMs]). Use would continue to be confined to the margins of the WSA because of rugged terrain. New rangeland developments could be implemented without wilderness considerations, although none are currently planned.
- Use, maintenance, and development of facilities and improvements for wildlife, water resources, etc. could be allowed if in conformance with the MFP. None are currently planned.
- The entire WSA acreage would continue to be closed to off-road vehicle (ORV) use as documented in the Henry Mountain MFP.
- The entire 38,700-acre area would be open to woodland product harvest. There is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class II (38,060 acres) and Class III (640 acres).
- Measures to control fire, insects, noxious weeds, or disease would be taken without concern for protecting wilderness values in instances which threaten human life, property, or high-value resources.
- Activities for the purpose of gathering information would be allowed by permit provided they are carried on in an environmentally sound manner.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Control of predators would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic

LITTLE ROCKIES WSA



LITTLE ROCKIES WSA

livestock. Methods of control would be determined as appropriate.

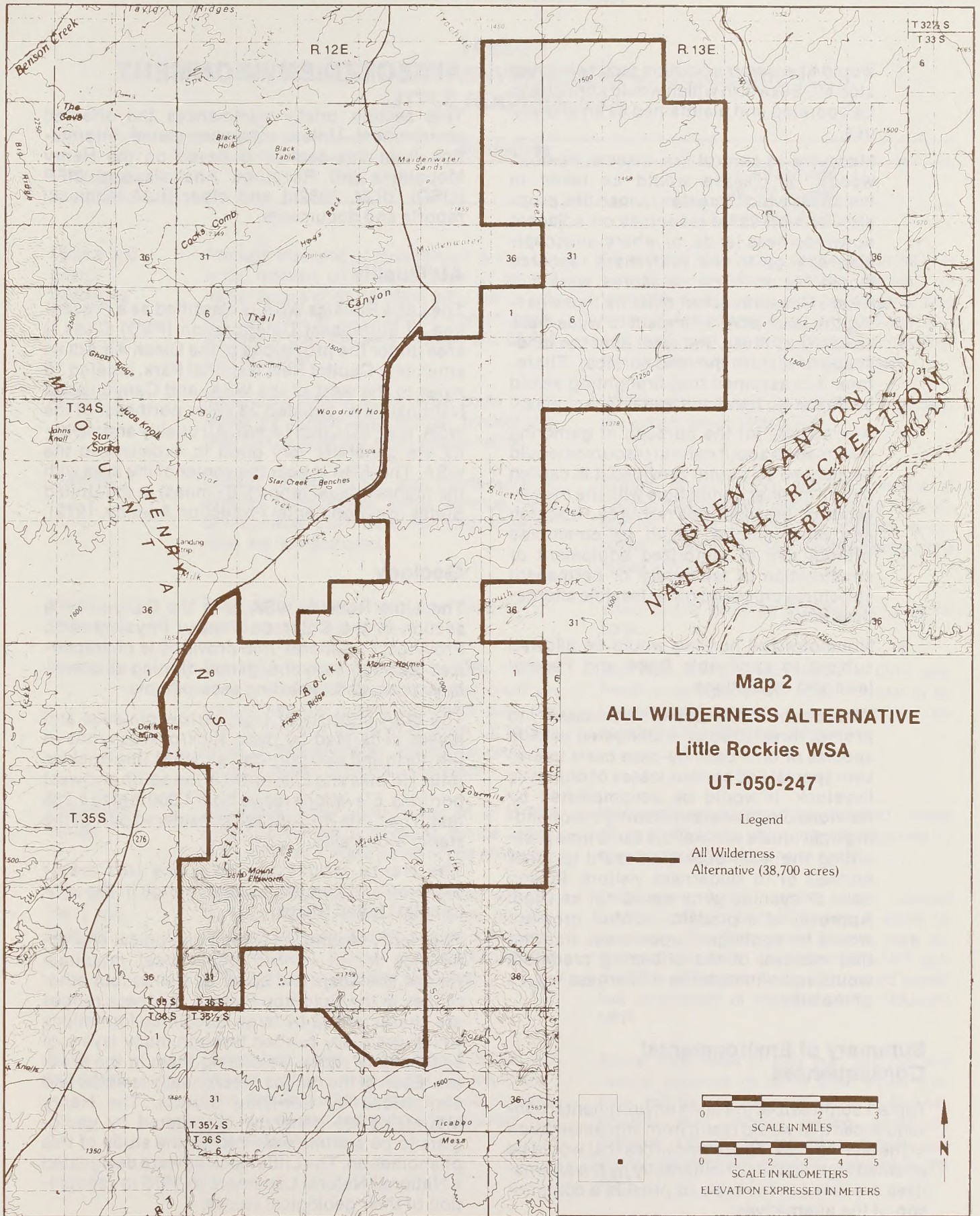
ALL WILDERNESS ALTERNATIVE (PROPOSED ACTION)

Under this alternative, all 38,700 acres of the Little Rockies WSA would be designated by an act of Congress as part of the NWPS, although minor boundary adjustments to improve manageability could be expected (refer to Map 2). It would be managed in accordance with the "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. Upon designation, acquisition of three sections of State land (approximately 1,920 acres) within the WSA (refer to Map 1) would be likely, and could be authorized by purchase or exchange. (Refer to Volume I for further information regarding State in-holdings.) Six of seven State sections adjacent to the WSA would be exchanged. Should land transfers be made, it is assumed that management and types of impacts to former State in-holdings would be the same as those on adjacent Federal lands and no specific analysis is given here. The figures and acreages given under this alternative are for Federal lands only. No private or split estate lands are located within the WSA.

The following are specific actions that would be taken under this alternative:

- After wilderness designation, all 38,700 acres would be withdrawn from mineral location and closed to new mineral leasing and sale. Development work, extraction, and patenting would be allowed to continue on that portion of the approximately 515 acres of existing mining claims that may be determined to be valid. Development would be regulated by undue and unnecessary degradation guidelines (43 CFR 3809) with consideration given to wilderness values. Existing oil and gas leases involving about 4,480 acres would be phased out upon expiration unless a find of oil or gas in commercial quantities is shown.
- Present domestic livestock grazing would continue as authorized in the Henry Mountain MFP. The 687 AUMs in the WSA would remain available to livestock as presently allotted. After designation, new rangeland developments would be allowed on a case-by-case basis if necessary for resource protection (rangeland and/or wilderness) and the effective management of these resources. No rangeland developments are existing or currently planned within the area.
- New water resource facilities or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or if authorized by the President pursuant to 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource facilities or treatments are located in the Little Rockies WSA, and none are planned.
- Wildlife transplants or developments would be allowed after designation only if they are compatible with wilderness values. Currently there are no wildlife developments in the WSA and none planned. Desert bighorn sheep transplants have been made in the WSA by the Utah Division of Wildlife Resources (UDWR). It is assumed that future transplant of bighorn sheep would also be allowable under this alternative as long as wilderness protection criteria are met (refer to Appendix 1).
- The entire 38,700-acre area would be closed to ORV use except for: (1) users with valid existing rights if approved by BLM in accordance with 43 CFR rules; or (2) for occasional and short-term vehicular access approved by BLM for maintenance of approved livestock developments.
- A specific Wilderness Management Plan would be developed to govern use and protection of the 38,700-acre wilderness. As part of that plan, it is assumed that a maintenance-and-use border would be allowed along roads adjacent to or "cherry-stemmed" into the wilderness area for purposes of road maintenance, temporary vehicle pull-off, and trailhead parking. This border would be up to 100 feet from the edge of the road travel surface.
- Harvest of forest products would not be allowed except for harvest of pinyon nuts or noncommercial gathering of dead-and-down wood if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any specifically planned.
- Visual resources in the WSA would be managed in accordance with VRM Class I standards which generally allow for only natural ecological change. An exception

LITTLE ROCKIES WSA



would be a communication facility located atop Mt. Ellsworth which would continue to be operated and maintained as an allowed use.

- Measures to control fire, insects, noxious weeds, or disease would be taken in instances which threaten human life, property, or high-value resources on adjacent nonwilderness lands, or where unacceptable change to the wilderness resource would result if the measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.
- Any activity for the purpose of gathering information about natural resources would be allowed by permit provided it is carried on in a manner compatible with the preservation of the wilderness resource. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Nonmotorized hunting would be allowed subject to applicable State and Federal laws and regulations.
- Where control of predators is necessary to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock, it would be accomplished by methods directed at eliminating the offending individuals while at the same time presenting the least possible hazard to other animals or to wilderness visitors. Poison baits or cyanide guns would not be used. Approval of a predator control program would be contingent upon clear showing that removal of the offending predators would not diminish the wilderness values of the area.

Summary of Environmental Consequences

Table 1 summarizes the main environmental consequences that would result from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

This section briefly summarizes the affected environment. Unless otherwise stated, information from this section is based on the Henry Mountain Unit Resource Analysis and MFP (USDI, BLM, 1982c) and other BLM technical reports and documents.

Air Quality

The Little Rockies WSA is classified as a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act as amended. Capitol Reef National Park, located 16 miles to the west of the WSA, and Canyonlands National Park, situated 23 miles northeast of the WSA, are PSD Class I areas. Air quality and visibility are generally very good to excellent in the WSA. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979).

Geology

The Little Rockies WSA is in the Canyonlands section of the Colorado Plateau Physiographic Province. In general, this province is characterized by deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

The WSA consists of high narrow plateaus and mesas separated by deep slickrock canyons in the north and east portions, and the Little Rockies (Mts. Holmes and Ellsworth) in the south and west portions. Elevations range from 4,000 feet to 8,235 feet. The Little Rockies are considered part of the Henry Mountains.

The Henry Mountains were the last major explored and named mountain range in the continental United States.

The Henry Mountains exhibit geological characteristics found in two other local mountain ranges, the Abajo and LaSal, as well as four other ranges in the Colorado Plateau. All these ranges are characterized by large laccolithic formations which gradually pushed through many layers of sedimentary rocks, deforming them in the process. Each of the ranges is essentially isolated and surrounded by low-lying deserts. The Henry Mountains are generally considered by geologists to be a prime example for the study of this phenomenon. The Little Rockies were designated a National Natural Landmark in 1975 in recognition of their geological values.

LITTLE ROCKIES WSA

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
LITTLE ROCKIES WSA

Resource	Alternatives	
	No Action	All Wilderness (38,700 Acres) (Proposed Action)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil, 18 billion cubic feet of natural gas, 500 to 1,000 tons of uranium oxide, 25 tons of gold, 500 tons of silver, and 50,000 tons of copper.	Oil and gas likely would not be recovered. Assuming a worst-case analysis, recovery of locatable minerals may also be foregone. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.
Wildlife	About 0.52 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude, especially the bighorn sheep introduced.
Livestock	Grazing of 687 AUMs and maintenance of existing developments would continue. New developments could be constructed; however, none are now proposed.	Grazing of 687 AUMs and maintenance of existing developments would continue. Little effect on current livestock management is expected. If proposed, new developments might not be allowed.
Visual Resources	The quality of visual resources could be impaired on up to 200 acres.	Visual quality could be impaired on up to 40 acres.
Recreation	The WSA is currently closed to ORV recreational use. Overall recreational use could increase from the current 125 visitor days per year to 186 over the next 20 years. Up to 200 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA would remain closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 200 acres (0.5 percent of the WSA), but the values in the WSA as a whole would not be affected.	Wilderness values would be protected, except on up to 40 acres, which may be disturbed by development of valid mineral rights.
Land Use Plans and Controls	This alternative would be consistent with the <i>Garfield County Master Plan</i> , State of Utah plans and policies, and the current BLM Henry Mountain MFP. It would not complement the NPS proposal for adjacent wilderness.	Designation would conflict with Garfield County's concept of multiple use. It would be consistent with State policy if lands were exchanged, and would complement the NPS proposal for wilderness. Designation would constitute amendment of the BLM Henry Mountain MFP.
Socio-economics	Annual local sales of less than \$16,755 and Federal revenues of up to \$14,401 would continue. Employment and income could increase from new mineral and energy development, but the probability is low.	Annual local sales of less than \$16,755 and Federal revenues of up to \$961 would continue, but Federal revenues of up to \$13,440 annually from mineral leasing would be foregone. Opportunity for future mineral and energy development could be reduced in the WSA.

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Soils

Soils in this WSA consist mostly of shallow sandy loams, shales, stony loams, and semi-desert talus. Fifty percent of the WSA has moderate to critical erosion conditions. Table 2 summarizes soil erosion condition for the WSA. Erosion condition was determined by using soil surface factors (terms are defined in the Glossary).

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	11,600	30	31,320
Moderate	1.3	7,700	20	10,010
Slight	0.6	13,600	35	8,160
Stable	0.3	5,800	15	1,740
Total		38,700	100	51,230

Sources: USDI, BLM, 1982c; Leifeste, 1978.

Vegetation

The predominant vegetation in the WSA is blackbrush (27 percent). A species of indigo brush (*Dalea epica*) is a U.S. Fish and Wildlife Service (FWS) candidate plant species under review for threatened or endangered status that is found near the south side of the WSA. Existing vegetation types are summarized in Table 3. Small areas of riparian vegetation are found in wash bottoms and stream channels. The total acreage is small and riparian is not listed as a separate vegetation type in Table 3.

TABLE 3
Existing Vegetation Types

Existing Vegetation Type	Acres	Percent of WSA
Rock outcrop	21,285	55
Blackbrush	10,449	27
Shrubs, grasses	3,483	9
Pinyon-juniper	1,935	5
Juniper	1,548	4

Source: USDI, BLM, 1982c.

The Little Rockies WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Sur-

vey, 1978). The potential natural vegetation (PNV) types of the WSA are listed on Table 4. PNV is the vegetation type(s) that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

TABLE 4
Potential Natural Vegetation Types

PNV Type	Acres	Percent of WSA
Juniper-pinyon woodland	23,220	60
Blackbrush	15,480	40

Source: USDI, Geological Survey, 1978.

Water Resources

The WSA contains one perennial stream, Trachyte Creek, that has approximately 6 miles of water course in the WSA. Most of the WSA's drainages are intermittent in flow. There is one spring. Several small, intermittent streams totaling over 30 miles flow into Lake Powell. The waters in the WSA have not been sampled for quality or quantity.

There are no wells nor is there any potential for underground water use. Generally, underground water sources are saline and not acceptable for human consumption.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its energy and mineral resources by SAI (1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is low to moderate, due to a marginally favorable geologic environment. An overall importance rating (OIR) of 2 was assigned to the Little Rockies WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed location of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and Bureau of

Mines in an independent mineral investigation report for the WSA. Reports will be made available to the public and will be submitted to the President and Congress as required by the Federal Land Policy and Management Act (FLPMA). BLM and the Secretary of the Interior will also consider the reports prior to making final wilderness recommendations.

All mineral resources within the area were assigned favorabilities of f2 or less, except for uranium which was assigned f3. The energy and mineral resource rating summary is given in Table 5.

TABLE 5
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 million cubic feet of gas
Uranium	f3	c3	500 to 1,000 tons
Coal	f1	c4	Less than 330,000 tons
Geothermal	f1	c4	None
Hydroelectric	f1	c4	None
Gold	f2	c1	Less than 25 tons
Silver	f2	c1	Less than 500 tons
Copper	f2	c2	Less than 50,000 tons

Source: SAI, 1982.

¹ Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

² Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but are not found or produced in the United States in sufficient quantities to meet such a need. The WSA could contain deposits of copper and silver that are currently listed as strategic and critical materials (Federal Emergency Management Agency, 1983). Although listed as strategic, copper is relatively common and supplies currently exceed domestic demand. Silver could be found in commercial quantities in the WSA.

LEASABLE MINERALS

There are no known deposits of leasable minerals occurring in the WSA, nor is there any current

exploration or drilling taking place. Oil and gas has a favorability for occurrence of f2/c1, with less than 10 million barrels of oil or 60 billion cubic feet of natural gas (in-place) of which 3 million barrels of oil or 18 million cubic feet of natural gas would be recoverable. (Refer to Appendix 6 for estimates of recoverability.) Approximately 4,480 acres of the Federal lands in the northern portion of the WSA are currently under post-FLPMA oil and gas lease. There are no pre-FLPMA leases. Oil and gas leases issued prior to the passage of FLPMA in October 1976 are referred to as pre-FLPMA leases and are managed differently than those issued after that date. The latter are known as post-FLPMA leases.

Pre-FLPMA leases are governed by stipulations determined at the time of lease application, before wilderness studies were mandated. These stipulations may allow for the impairment of wilderness values, as a prior and existing right associated with lease development.

Post-FLPMA leases in WSAs contain more restrictive stipulations which require exploration and development to be nonimpairing to wilderness values. Post-FLPMA leases generally require restricted access and special reclamation provisions, such as topographic contouring, special seeding, and hydromulching (USDI, BLM, 1981b). Because of less restrictive requirements, pre-FLPMA leases may be more economical to explore and develop than post-FLPMA.

Leases producing oil or gas prior to their original expiration date or those that are part of a unitized field would continue. Undeveloped leases would terminate on their expiration dates (usually 10 years from the date of issuance). Wilderness designation would not affect the termination of existing leases.

Most (34,220 acres) of the Little Rockies WSA is presently closed to leasing (Category 4) to protect scientific, wildlife, recreational, and geological values. The remainder of the WSA is managed as Category 2 (standard and special stipulations).

LOCATABLE MINERALS

There are no known deposits of gold, silver, or copper in the WSA. Based on past exploration and prospecting, the likelihood for any commercial deposits of these minerals is considered low. Geologic favorability is rated f2/c1. (Refer to Table 5 for estimated amounts of resources.)

There has been recent uranium exploration in the Four Mile Canyon area. Drill hole data and other geologic considerations indicate there may be

LITTLE ROCKIES WSA

commercial deposits of uranium and silver present, but additional information is needed for estimates to be further refined. The WSA has 25 claims on 515 acres. These claims lie in scattered locations throughout the WSA.

SALABLE MINERALS

There are no commercial deposits of salable minerals in the WSA. There are scattered deposits of sand and gravel on the western margin of the WSA. Sand and gravel are common in the area, and there are many deposits closer to existing and possible future market areas.

Wildlife

There are no existing wildlife management facilities in the WSA nor have any potential facilities been identified within the WSA. There are no existing areas of vegetation treated to enhance wildlife habitat nor have any areas been identified for treatment within the WSA.

Chukars, doves, and cottontails are the predominant game animals in the WSA. There are no crucial and critical big game habitats in the WSA. Deer numbers are currently very low. Several furbearers, other small mammals, and birds inhabit the WSA. There are no fish within the WSA. In January 1985, UDWR reintroduced 21 desert bighorn sheep into the WSA.

There are no threatened, endangered, or sensitive animals inhabiting this WSA. There is no Federally designated critical habitat within the WSA.

Forest Resources

There are no present or potential commercial timber sites in this WSA. The area's inaccessibility and limited volumes of pinyon-juniper preclude economic utilization.

Livestock and Wild Horses/Burros

Livestock use is confined to the margins of the WSA due to rugged terrain. Any livestock tending is done by horseback. No areas within the WSA have been identified for vegetation manipulation projects for livestock benefit.

Two allotments are permitted for an estimated 687 AUMs in the WSA. This represents 7 percent of the AUMs of the allotments involved (refer to Table 6). There are no livestock support facilities in the WSA.

There are no wild horses nor burros within the WSA.

TABLE 6
Livestock Grazing Use Data

Allotment	Season of Use	Number of Livestock	Number of Permittees	Number of AUMs in WSA
Rockies	11/1 to 5/31	834 cattle	8	518
		1,300 sheep	1	
Trechyte	11/1 to 5/31	300 cattle	2	189
		1,080 sheep	1	

Source: USDI, BLM, 1982c.

Visual Resources

Scenic quality is exceptional throughout the WSA. There is a good variety of landform and colorful rock formations which contrast with the surrounding desert and the water of Lake Powell.

Most of the west side of the WSA is clearly visible from Highway U-276, a major travel route which carries up to 190,000 visitors a year to Lake Powell. The east side is visible to boaters on Lake Powell. The BLM Visual Resource Evaluation System rated the WSA's visual characteristics as shown in Table 7. (The BLM's VRM system is explained in Appendix 7.)

TABLE 7
Visual Resource Quality and Management Class

Element	Acres	Percent of WSA
Scenic Quality		
Class A	38,060	98
Class B	0	0
Class C	640	2
Management Class		
Class I	0	0
Class II	38,060	98
Class III	640	2
Class IV	0	0

Source: USDI, BLM, 1982c.

Cultural Resources

There are three lithic scatters and one rock shelter in the WSA, all found along the south fork of Ticaboo Creek. There is a high potential for the existence of other archaeological and historical sites in the WSA, particularly along Ticaboo and Trachyte Creeks. No sites are on the National Register of Historic Places nor are any known sites potentially eligible for listing on the Register.

Recreation

Fifteen recreational opportunities were evaluated for their quality in this WSA. Thirteen opportunities were present in varying degrees. Six opportunities (backpacking, camping, dayhiking, photography, geologic study, and general sightseeing) are considered outstanding in quality. A summary of selected activities follows.

Dayhiking, camping, and backpacking opportunities are excellent because of the WSA's large size, good access, the presence of an adjacent wilderness proposal in Glen Canyon NRA, and the general variety of features found in the WSA. Hiking routes total over 40 miles in the WSA, with at least an additional 20 miles in the adjacent NRA. Extended trips are possible down the Trachyte drainage, either directly from Highway U-276 or via either Mt. Holmes or Mt. Ellsworth. Several large slickrock side canyons east of these peaks offer excellent opportunities for exploring. This WSA probably has more potential for loop trips than any other WSA in the Henry Mountain Resource Area. Boat shuttles on Lake Powell are also possible. Outstanding views of Lake Powell are possible from Mt. Holmes and Mt. Ellsworth. Wildlife observation opportunities have increased in the WSA due to the reintroduction of desert bighorn sheep in January 1985. The Little Rockies were designated as a National Natural Landmark in 1975 because of their geologic significance.

Visitor use in the WSA is estimated at 125 visitor days per year. Commercial outfitters do not use the WSA on a regular basis. A few commercial permits have been issued since 1980. ORVs are used little, if at all, in the WSA. The entire WSA is presently closed to ORV use and there are no vehicular ways.

Wilderness Values

SIZE

This WSA is 38,700 acres in size and is approximately 17 miles long and averages 4 miles wide. The WSA is adjacent to a NPS-proposed wilderness area of 35,000 acres. This combined acreage totals over 73,000 acres.

NATURALNESS

Most of this WSA is in a completely natural condition. The only human intrusion is a NPS transmitter site atop Mt. Ellsworth which is permitted under the "Wilderness Management Policy." The transmitter site occupies less than 1 acre and is maintained by helicopter. There are no human intrusions requiring rehabilitation. Overall quality of naturalness is considered high and meets the

standards for naturalness set by the *Wilderness Act*.

SOLITUDE

Opportunities for recreationists to find solitude (i.e., a secluded spot away from others) in the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds. As noted above, this WSA is large. The excellent vistas of Lake Powell and central Utah from the summits of Mt. Holmes and Mt. Ellsworth also assist in giving the visitor a sense of solitude. Numerous steep-walled, narrow canyons such as Four Mile, Two Mile, Maidenwater, and Trachyte contribute to topographic screening of recreationists from each other. Vegetation is sparse pinyon-juniper and is not a factor in determining the degree of solitude. There are no sights and sounds outside the WSA that would interfere with a visitor's opportunity to find a secluded spot. Overall, the quality of opportunities for solitude were judged to meet the standards set by the *Wilderness Act* on 27,700 acres. Approximately 11,000 acres do not have outstanding opportunities for solitude.

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive, unconfined recreation were evaluated by considering miles of hiking routes in relationship to the WSA's size, the number of recreational opportunities present, and an evaluation of the quality of these opportunities. This WSA was determined to have a diversity of recreational opportunities, including excellent opportunities for sightseeing, dayhiking, backpacking, camping, geologic study, and photography. Several interesting loop hiking routes are possible through challenging and varied terrain including both mountain peaks and several canyons. Overall opportunities for primitive, unconfined recreation meet the standards set by the *Wilderness Act* on 27,700 acres. The remaining 11,000 acres do not meet the standards. The adjacent NPS wilderness proposal enhances the outstanding primitive recreation opportunities in the WSA. For example, hiking routes continue down the drainages to Lake Powell.

SPECIAL FEATURES

Because of the remote and isolated nature of portions of this WSA, there is high quality potential habitat for desert bighorn sheep. In January 1985, 21 desert bighorn sheep were introduced into the WSA by UDWR. This has increased the ecological and scenic values of the WSA.

LITTLE ROCKIES WSA

The area has historical values in that several archaeologic sites have been identified, and there is a high potential for the discovery of additional sites.

Portions of this WSA were designated as a National Natural Landmark in 1975 because of the geologic values represented.

Land Use Plans and Controls

There are three State sections (1,920 acres) within the WSA and approximately seven adjacent State sections. The management philosophy for all State school sections is to maximize economic returns for the State School Fund. No activities are currently occurring on these sections. They are under lease for oil, gas, and grazing.

There are no rights-of-way or private in-holdings nor are there any Federal lands with non-Federal subsurface rights in the WSA.

The *Garfield County Master Plan* (Five County Association of Governments, 1984) covers this WSA. The master plan recognizes that the county possesses "... some of the most spectacular scenery in the United States The county is sparsely populated and most of it is in its original pristine condition." Garfield County has proposed to the Utah Congressional Delegation that 111,053 acres of BLM lands in three WSAs and 31,600 acres in one Forest Service unit be recommended for wilderness. The county plan recommends that the remaining lands within the county, including the Little Rockies WSA, be retained for multiple uses. The plan's concept of multiple use includes forestry, livestock grazing, mining, wildlife, and recreation.

The Glen Canyon NRA Wilderness Recommendation (USDI, NPS, 1979) includes a proposed wilderness unit adjacent to this WSA.

The Little Rockies is managed under the BLM Henry Mountain Planning Area MFP (USDI, BLM, 1982c) which allows multiple use with certain restrictions on oil and gas and ORV use, as discussed in the description of the No Action Alternative. The Henry Mountain MFP has been reviewed by the Governor of Utah and found to be consistent with State plans.

Socioeconomics

DEMOGRAPHICS

The WSA lies within Garfield County, one of Utah's least populated and most rural counties. In 1980, the Garfield County population was 3,673,

reflecting a population density of 0.71 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1983 and University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Ticaboo about 20 road miles south, also in Garfield County. Ticaboo had a 1980 population of about 300. Since 1980 the population has declined to between 150 and 200. Hanksville (a small community of approximately 351), located about 35 road miles north of the WSA, and Green River, approximately 100 road miles north of the WSA in Emery County, are main gateways and service areas for visitors to the Little Rockies WSA.

EMPLOYMENT

Garfield County is one of the poorest counties in the State of Utah (South et al., 1983). Government is the largest employment sector within the county and represents 21 percent of the work force followed by construction, services, manufacturing, and agriculture (refer to Table 8). The county, however, maintains a diversified economic base (South et al., 1983). The Town of Escalante relies on farming, stockraising, and lumbering, supplemented by tourism, some oil production, and government employment (South et al., 1983). Another town, Boulder continues to rely on agriculture.

TABLE 8
1980 Employment
Garfield County, Utah

Industrial Sector	Number	Percent
Agriculture	236	11
Mining	210	10
Construction	379	17
Manufacturing	248	11
Transportation, Communication, and Utilities	85	4
Finance, Insurance, and Real Estate	16	1
Services	266	12
Government	457	21
Nonfarm Proprietors	157	7
Total	2,179	100

Sources: Utah Department of Employment Security, 1980; USDC, Bureau of Economic Analysis, 1982.

INCOME AND REVENUES

In Garfield County, the nonfarm industry sector in 1980 produced over 96 percent of total labor and proprietors' income representing an annual

growth rate of 22.2 percent (University of Utah, Bureau of Economic and Business Research, 1982) (refer to Table 9). Almost 80 percent of this income came from the private sector, principally mining, construction, and manufacturing, while government sources produced 20 percent of personal income and earnings for the county. Farming produced 3.8 percent of the county's total personal income, amounting to \$949,000.

TABLE 9
1980 Personal Income and Earnings
Garfield County, Utah

Type/Source	Earnings Income (in \$1,000)	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietors' Income (Earnings)	24,792	21.9
Total Labor and Proprietors' Income by Industry Source		
Farm	949	16.6
Nonfarm	23,843	22.2
Private	19,049	26.5
Agricultural	79	(D)
Service and Other		
Mining	4,222	47.0
Construction	5,536	66.5
Manufacturing	3,294	14.2
Transportation and Public Utilities	1,545	16.8
Wholesale Trade	96	1.3
Retail Trade	1,302	7.6
Finance, Insurance and Real Estate	189	(D)
Services	2,786	16.3
Government	4,794	10.8

Sources: USDC, Bureau of Economic Analysis, 1982; University of Utah, Bureau of Economic and Business Research, 1982.

¹ Earning components as a percent of total earnings; totals do not equal 100.

² Earning components as a percent of total earnings for nonfarm sector.

³ Earning components as a percent of incremental earnings within private sector.

(D) Not shown to avoid disclosure of confidential information or for items \$50,000 or less. Data are included in totals.

Economic-related activities in the WSA include mineral exploration, livestock production, and recreation. Table 10 summarizes local income and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

The WSA has 25 mining claims. Regulations require a \$100 annual expenditure per claim for labor and improvements, an undetermined part of which is spent in the local economy. Not all of the claims are current in assessment work.

No oil and gas or mineral production has occurred in the WSA. Therefore, mineral and energy resource production from the WSA has not contributed to local employment or income.

Twelve livestock operators have a total grazing privilege of 687 AUMs within the WSA. If all this forage were utilized, it would account for \$13,740 of livestock sales and \$3,435 of ranchers' returns to labor and investment.

The WSA's recreational use is low and related local expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Little Rockies WSA is estimated as about 125 visitor days per year. Only a portion of the expenditures for recreational use of the WSA contribute to the local economy of Garfield and Wayne Counties.

The WSA generates Federal revenues from mineral leases and livestock (refer to Table 10).

Oil and gas leases in the WSA cover approximately 4,480 acres. At \$3 per acre, lease rental fees generate up to \$13,440 of Federal revenues annually. Half of these monies are allocated to the State, which then reallocates these revenues to various funds, the majority of which are related to energy development and mitigation of local impacts of energy and mineral development.

Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittees in the WSA can use up to 687 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$961.80 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

TABLE 10
Local Sales and Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	None	\$13,440
Mining Claim Assessment	Less than \$ 2,500	None
Livestock Grazing	\$13,740	\$ 961.80
Recreational Use	Less than \$ 515.50	Unknown ²
Total	Less than \$16,752.50	Up to \$14,401.80

Sources: BLM Files; Appendix 9.

¹ Local sales represent money potentially spent. They do not account for the total local income that would be generated by these expenditures.

² A few commercial permits have been issued since 1980.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as noted in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative

The major potential changes that could occur in the area would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is

unknown but would probably be low due to the WSA's rough terrain and relatively low resource potential. The following is a worst-case analysis based on the assumption that minerals would be developed sometime in the future and cause the following disturbance: oil and gas, 160 acres; and uranium, copper, gold and silver, 40 acres. (Appendix 10 lists surface disturbance assumptions and estimates.)

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. Disturbance of 200 acres would result in minor, temporary increases in fugitive dust emissions. Because no major sources of air pollutant emissions are proposed in the vicinity of the WSA and, because air quality PSD Class I standards must be maintained in Capitol Reef National Park (located 16 miles west of the WSA) and Canyonlands National Park (located 23 miles northeast of the WSA), air quality would remain essentially as at present.

GEOLOGY

Little impact to geology is expected because disturbances associated with locatable minerals (i.e., uranium, copper, gold, and silver) and oil and gas exploration and development activities would probably not exceed 200 acres and would involve mainly surface development or widely spaced wells.

SOILS

It is estimated that up to 200 acres of soil could be disturbed by mineral exploration and development. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 200 acres would increase from 540 cubic yards/year to 1,080 cubic yards/year. Soil loss would decrease as reclamation occurred. The time required, however, for complete reclamation cannot be determined.

Therefore, under this alternative, maximum annual soil loss in the WSA would increase by approximately 540 cubic yards (approximately 1.1 percent) over the current annual soil loss to approximately 51,770 cubic yards/year.

VEGETATION

Because only 200 acres would be disturbed by mineral and energy exploration and development, there would not be major changes in any vegetation type. *Dalea epica*, a candidate threatened or endangered plant, is found within or near the WSA. Before authorizing surface-disturbing

activities (200 acres potential) the BLM would conduct site-specific clearances of the potentially disturbed areas. If these species could be affected, the BLM would initiate Section 7 consultation with the U.S. FWS as required by the Endangered Species Act and BLM policy. The BLM would request a biological opinion when appropriate (refer to Appendix 4). Because necessary measures would be taken to protect these plants, it can be reasonably concluded that the viability of populations of *Dalea epica* would be preserved under the No Action Alternative.

WATER RESOURCES

Since precipitation is low and only one stream within the WSA is perennial, no significant sedimentation or change in total dissolved solids is expected to occur from the 540 cubic yards of annual soil loss from surface disturbance. Opportunities exist under this alternative for the development of water-related improvements or expansion of existing water sources (the WSA contains one perennial stream and several intermittent streams). However, no water developments are planned in the current MFP for the Henry Mountain Planning Area.

Mineral exploration and development in the area would generally be confined at or near the surface or with widely spaced wells and would not significantly change ground water quantity or quality.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

The potential for less than 10 million barrels of oil or less than 60 billion cubic feet of natural gas exists (in-place) in the WSA, with less than 3 million barrels of oil or 18 billion cubic feet of gas considered recoverable. Most of the area (34,220 acres) would remain closed to leasing and no exploration or development would occur. Oil and gas resources could be explored and developed, subject to Category 2 (standard and special stipulations) on about 4,480 acres. As much as 160 acres of surface disturbance would take place if exploration and development were to occur. Due to the small size of these deposits and the large acreage closed to leasing, production is not expected under this alternative.

Locatable Minerals

The entire WSA would remain open to mining claim location. The potential deposits considered recoverable under this alternative consist of less than 50,000 tons of copper, 500-1,000 tons of uranium, 500 tons of silver, and 25 tons of gold. Approximately 40 acres could be disturbed due to

exploration and development of these locatable mineral resources. Employment of undue and unnecessary degradation stipulations would not affect a claim holders ability to develop the area. However, except for uranium and silver, which possibly occur in commercial quantities, the likelihood of development is thought to be low because of economic considerations (e.g., transportation, low resource potential, etc.).

WILDLIFE

The proposed ACEC designation would assist in preserving wildlife values in most of the WSA, as would the continued 34,220-acre closure to oil and gas leasing, exploration and development; the ORV closure in the entire WSA; and management under VRM Class II in most of the WSA. However, disturbance of as much as 200 acres (0.52 percent of the WSA) through mineral and energy exploration would disrupt wildlife. Deer, desert bighorn sheep, and mobile nongame animals would be dispersed from the disturbed areas for the lifetime of these activities. Less mobile wildlife would either perish or coexist with these disturbances at smaller and less viable population levels. No threatened, endangered, or sensitive animal species would be affected because none inhabit the area. The UDWR would be allowed to transplant bighorn sheep into the WSA. Mineral exploration and development could reduce the potential of the area as bighorn sheep habitat.

Vegetation manipulation projects or water developments to benefit wildlife would be allowable under this alternative, although no need for such improvements has been identified, and it is unlikely that any improvements would ever be developed for wildlife in this WSA.

FOREST RESOURCES

The entire WSA would be available for woodland harvest under this alternative. However, because there are few trees other than scattered pinyon and juniper (none of which are utilized except by occasional campers or hikers), limited access due to terrain and ORV closures, and because only minimal surface-disturbing activities are anticipated (involving no more than 0.52 percent of the WSA), any effect on the potential for utilizing forest resources would be minimal.

LIVESTOCK

There would be no change in or effect on current livestock use and management under this alternative. Livestock use would continue to be confined to the margins of the WSA due to rugged terrain.

Due to the ORV closure and rugged terrain, any livestock tending would continue to be done by horseback. Although developments to benefit livestock would be allowed under this alternative, none are anticipated.

VISUAL RESOURCES

Under this alternative, visual resources of the area would be largely protected due to management of the area as an ACEC, VRM Class II management on over 98 percent of the area, the ORV closure throughout the entire WSA, and mineral leasing closure on 88 percent of the WSA.

Visual values in areas affected by the estimated 200 acres of potential surface disturbance from mineral and energy exploration would be degraded and, although mitigation would be applied to meet VRM Class II management goals, objectives would probably not be met during the short term. Much of the disturbance would be likely to take place in the Four Mile Canyon area. After the project's life, rehabilitation would restore visual resources to meet VRM Class II objectives where possible. The ability to meet these objectives would be unlikely if uranium is discovered and produced in the Four Mile Canyon area. In the area as a whole, visual values would not be significantly affected.

CULTURAL RESOURCES

Cultural resources would benefit from management of the area as an ACEC, the ORV closure, the mineral leasing closure on 34,220 acres, and management of 98 percent of the area as VRM Class II. Disturbance of up to 200 acres by mineral exploration and development under this alternative could affect cultural sites. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any surface disturbance and would lessen impacts. The overall effect on cultural resources would be low due to the limited amount of cultural resources in the area and to mitigating measures that would be taken prior to surface-disturbing activities. Vandalism (not currently a problem) would be expected to increase in proportion to the general population increase.

RECREATION

Recreational values would be protected by management of the area as an ACEC, including the ORV and mineral leasing closures and management of 98 percent of the area as VRM Class II. Much of the mineral-related disturbance would be anticipated to occur in the Four Mile Canyon area. Up to 200 acres could be disturbed by mineral and energy activities. Primitive recreational

opportunities and quality would be diminished on the affected areas. Because the area is currently closed to ORV use and the steep topography of the area restrains such use, the continued ORV closure would not affect hunting or other recreational use of the area.

The future trends in recreational use of the WSA are unknown. However, based on a review of several projections (Utah Outdoor Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981) it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate overall recreational use is expected to increase from 125 current visitor days per year to 186 visitor days at the end of 20 years.

WILDERNESS VALUES

Expected mineral and energy exploration and development could disturb an estimated 200 acres. Wilderness values in this WSA (i.e., naturalness, opportunities for solitude and primitive recreation, and special features) would be lost or diminished in affected areas during the time of exploration and development. Impacts to these values probably would not be significant to the WSA as a whole because leasing would be restricted to about 12 percent of the WSA and, in most cases, rehabilitation would eventually restore wilderness character. If uranium is discovered and produced in the Four Mile Canyon Area, wilderness values would be lost in that portion of the WSA. Other than that, wilderness values would largely be protected through management of the area as an ACEC, with the accompanying ORV closure, the mineral leasing closure on 34,220 acres, and the management of 98 percent of the area as VRM Class II.

LAND USE PLANS AND CONTROLS

This alternative would be inconsistent with the wilderness proposed by the NPS for the adjacent Glen Canyon NRA. Although the area would not be managed as wilderness, an ACEC management plan would be developed and some of the same restraints that would occur with wilderness designation (ORV closure, mineral leasing closure) would be applied. If mineral exploration and development occurs on as much as 200 acres, especially in Four Mile Canyon, there could be sights and sounds that could degrade wilderness values within the Glen Canyon NRA boundary in specific locations.

This alternative would also be in conformance with BLM's Henry Mountain MFP. This MFP has

been reviewed by the Governor of Utah and found to be consistent with State plans. It is generally consistent with the multiple-use concept of the *Garfield County Master Plan*, since most resource uses would continue, although under more restrictive conditions. It would conflict with the County's concept concerning mineral development because most of the area would be closed to leasing.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the oil and gas, uranium, silver, or other minerals in the WSA were developed it would lead to an increase in employment and income for Wayne and Garfield Counties. However, the probability of economic development of minerals within the WSA is low, with the exception of some potential for uranium and silver (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (687 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present with \$13,740 of livestock sales and \$3,435 of ranchers' returns to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures could increase at a rate of 2 percent per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is estimated to increase only 61 visitor days per year over the next 20 years and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy) recreation-related expenditures attributable to the WSA would likely not be significant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are 4,480 acres in the WSA open to oil and gas lease that could continue to bring up to \$13,440 additional Federal lease fee revenues per year in addition to new royalties from lease production if oil and gas were discovered. Half of these monies would be allocated to the State, a portion of which could reach the local economy. Collection of livestock grazing fees (\$961 per year) would continue. About 50 percent of the grazing fee revenues would con-

tinue to be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (38,700 Acres) (Proposed Action)

As noted in the Description of the Alternatives section, the major changes that could occur in the 38,700-acre area would be related to its withdrawal from mineral location and sale and closure of an additional 4,480 acres to new mineral leasing. The entire area would be placed in leasing Category 4 (closed to leasing). The WSA would continue to be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis it is assumed that the existing mining claims would eventually be explored and developed, causing an estimated 40 acres of disturbance within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities, and that oil and gas leases would not be renewed nor future leasing of oil and gas allowed. Appendix 10 lists surface disturbance assumptions and estimates for the WSA.

Because potentially disturbed areas would be smaller than under the No Action Alternative (40 vs. 200 acres), the impacts from development and surface disturbance on air quality, geology, vegetation, and water resources would be insignificant, as described for the No Action Alternative. Wilderness designation would provide additional protection to these resources. Other effects on these resources due to changes in management are discussed below.

SOILS

The soil resource could slightly benefit under the All Wilderness Alternative because of the reduced likelihood of surface-disturbing activities. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 40 acres would increase from 108 cubic yards/year to 216 cubic yards/year. However, soil loss would decrease as reclamation occurred. The time for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual increase in soil loss from surface disturbance in the WSA would be approximately 108 cubic yards (approximately 0.21 percent) over the current annual soil loss per year to approximately 51,338 cubic yards/year. The increase could be 972 cubic yards per year less than under the No Action Alternative.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Approximately 4,480 acres of the WSA are currently under oil and gas lease, but no exploration or development of oil and gas is occurring within the WSA. The leases are post-FLPMA and could only be developed subject to the nonimpairment stipulations issued at the time of leasing. It is unlikely that existing leases will be developed or a showing of commercial quantities made prior to their expiration dates, and expired leases will not be re-issued.

Exploration for and development of a potential resource of less than 10 million barrels of oil and less than 60 billion cubic feet of natural gas (in-place) with 3 million barrels of oil and 18 billion cubic feet of natural gas considered recoverable would be foregone under this alternative. However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of potential oil and gas recovery.

Locatable Minerals

Approximately 515 acres are under mining claim within the WSA. Exploration, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under undue and unnecessary degradation guidelines. It is estimated that, if minerals are located prior to designation, up to 40 acres could be disturbed due to exploration and development. The worst-case impact to minerals would occur if the potentially recoverable minerals are not within mining claims filed prior to designation. In that case, the potential for recovery of less than 50,000 tons of copper, 500-1,000 tons of uranium, 25 tons of gold, and 500 tons of silver would be foregone. After designation, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b). There are no known commercial deposits of gold and copper, but there may be potential for the production of uranium and silver in the Four Mile Canyon area. Much of the deposits are under existing claim and could be developed.

Because there is no production of locatable metals in this WSA, economic considerations (e.g., transportation, low potential for minerals other than uranium and silver) are unfavorable, and much of the uranium-silver resource is currently under claim, and if valid, and could be developed, this alternative would not result in a signifi-

cant loss of production of locatable mineral resources.

WILDLIFE

Under this alternative, wildlife would generally benefit due to the preservation of the area's solitude and naturalness through application of the "Wilderness Management Policy" including the ORV closure, the closure to future mineral location and leasing, and management under VRM Class I. Although vegetation manipulation projects and water developments would probably not be allowed, none are planned in the WSA nor would any likely be developed even without designation. The UDWR could still be allowed to introduce additional desert bighorn sheep into the area in the future under this alternative.

Due to the size of this WSA and the adjacent Glen Canyon potential wilderness, species which require large acreages, such as bobcat, bighorn sheep, and mountain lion, would be expected to benefit most from wilderness designations.

Potential disturbance from mineral development would be reduced under this alternative from 200 acres to 40 acres (0.10 percent of the WSA). Deer, desert bighorn sheep, and mobile nongame animals would be dispersed from the disturbed area for the lifetime of these activities. No threatened, endangered, or sensitive animal species would be affected because none inhabit the area.

FOREST RESOURCES

Under this alternative, no woodland harvest would occur. However, none is occurring at present due to the lack of marketable timber, steep terrain, lack of access, and lack of demand. Therefore, this alternative would have little, if any, effect on the harvesting of forest resources within the WSA.

LIVESTOCK

There would be no change in or effect on the current livestock use and management under this alternative. Livestock use would continue at up to 687 AUMs and would be confined to the margins of the WSA due to rugged terrain. Due to the ORV closure and rugged terrain, any livestock tending would continue to be done by horseback. Although some types of developments to benefit livestock may not be allowed under this alternative, none are anticipated even without designation.

VISUAL RESOURCES

The high quality visual resources in this WSA would benefit from the greater protection from

surface-disturbing actions that wilderness designation would bring. Under wilderness management, the WSA would be managed as VRM Class I and mineral leasing and location and ORV use would not be allowed.

Under this alternative, the possible disturbance that could occur from mineral exploration and development would be reduced to 40 acres from the 200 acres anticipated under the No Action Alternative. This disturbance could involve exploration and possible development of uranium in the Four Mile Canyon area. Although mitigation would be applied in an attempt to meet VRM Class I management goals, objectives could not be met. After the life of the project, rehabilitation would restore visual resources to meet VRM Class I objectives where possible. The ability to do so would be unlikely if uranium is discovered and produced in Four Mile Canyon. In the WSA as a whole, however, visual values would not be significantly affected.

CULTURAL RESOURCES

The probability of finding additional sites in the WSA is high and there is potential for increased vandalism (not a current problem) to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Although use is currently low (about 125 visitor days per year), the WSA has outstanding primitive recreational values. Under this alternative, possible surface disturbance would be reduced from 200 acres to 40 acres, and those high quality recreational opportunities would be recognized, managed, and preserved.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate. Management provided through a Wilderness Management Plan would attempt to control destructive increases in future recreation use, and the quality of the primitive recreation experience probably would not be negatively affected by the increased use. As recreation use increased other commercial operators based on primitive recreational activities could apply for use of the WSA.

The area is currently closed to ORV use. The steep topography also restrains ORV use. Therefore, continued ORV closure under this alternative would not affect hunting or other recreational uses of the area.

WILDERNESS VALUES

Designation and management of all 38,700 acres as wilderness would ensure the preservation of the wilderness values of size, naturalness, and outstanding opportunities for solitude and primitive and unconfined recreation, except on up to 40 acres that could be disturbed due to possible mineral development. These disturbances would have long-term effects on wilderness values in localized areas (where there are 515 acres of mining claims) but would not be expected to significantly affect wilderness values in the area as a whole. The special geologic and scenic features in this WSA would also be preserved. Increased recreational use due to designation would be controlled by BLM under a Wilderness Management Plan and no loss of wilderness values due to increased visitation would be expected.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the wilderness proposal by the NPS for the adjacent Glen Canyon NRA. However, if development of uranium claims occurs in the Four Mile Canyon area, there could be sights and sounds that would degrade wilderness values within the NRA boundary in specific locations.

This alternative is generally consistent with the multiple-use concept of the *Garfield County Master Plan* since most resource uses would continue, although under more restrictive conditions. This alternative would conflict with the County's multiple-use concept in the area of minerals because restrictive conditions would be placed on mineral development, including the phasing out of existing leases and closure of the area to future mineral location and leasing. Because State lands within the WSA would be exchanged for lands outside the WSA, wilderness designation would not conflict with the policy of the State of Utah to maximize economic returns.

The BLM Henry Mountain Planning Area MFP does not provide for wilderness designation. A decision by Congress to designate the WSA as wilderness would be an amendment to the MFP.

SOCIOECONOMICS

Overall there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of resources under wilderness designation there could be slight losses in local income and Federal revenues currently provided by resource uses in the WSA (refer to Table 10) as well as loss of potential increases in income and Federal revenues that could occur under the No Action Alternative.

The potential for mineral development in the WSA is low to moderate (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid existing oil and gas leases and mining claims could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is low to moderate, it is estimated that potential mineral-related local income could be slightly reduced by wilderness designation. In addition, any local income related to assessment of future mining claims would be lost.

Livestock use and ranchers' income would continue as at present with \$13,740 of livestock sales and \$3,435 of ranchers' return to labor and investment. Proposed improvements for livestock would be foregone along with any resulting increased ranchers' income. No such potential range improvements have been proposed.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

The loss of 4,480 acres now leased for oil and gas would cause an eventual loss of up to \$13,440 per year of lease fees to the Federal Treasury. In addition to these rental fees, any potential royalties from new lease production could also be foregone.

Recreation-related Federal revenues may increase if the demand for commercial outfitter services increases. No commercial outfitters use the WSA on a regular basis, but designation could lead to more commercial recreational use in the area.

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Fremont Gorge
WSA



FREMONT GORGE WSA

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FREMONT GORGE WSA

(UT-050-221)

INTRODUCTION

General Description of the Area

The Fremont Gorge Wilderness Study Area (WSA) consists of 2,540 acres of public land managed by the Utah BLM Richfield District. This WSA was dropped from wilderness study status by the Secretary of the Interior on December 30, 1982 due to its small size. As a result of a decision of the Eastern District Court of California (Sierra Club vs. Watt, No. Civil 5-83-035 LRK, dated April 18, 1985), it is in WSA status and is analyzed in this Environmental Impact Statement (EIS) in accordance with: (1) general land use planning provisions of Section 202 of the Federal Land Policy and Management Act (FLPMA); and (2) BLM guidance that allows for wilderness consideration of areas of less than 5,000 acres if they are adjacent to land with wilderness potential administered by other Federal agencies. It is located in the Canyonlands Section of the Colorado Plateau Physiographic Province immediately west of Capitol Reef National Park, approximately 3 air miles east of Torrey, Utah, in Wayne County. In general, this province is characterized by arid and semiarid climate, deep canyons, gently dipping sedimentary rocks, and retreating escarpments.

The topography of the Fremont Gorge WSA is characterized by a broad, gently north-northeast sloping plateau, intricately cut by entrenched meandering streams that drain to the east into the Fremont River. The canyons are deep and narrow and are separated by narrow, high, relatively flat-topped ridges.

Rainfall generally averages approximately 7 inches annually, with the greatest precipitation periods being April and May and July through October. Temperatures can range from under 0 degrees Fahrenheit (F) in the winter to over 100 degrees F in the summer.

Rock outcrops are common in the WSA. The major vegetation type is scattered pinyon and juniper.

Specific Issues Identified in Scoping

General issues pertaining to wilderness designation, the "Wilderness Study Policy" (USDI, BLM, 1982a), or the environmental analysis process are discussed in Volume I of this EIS. Public opportunity to review and comment on an initial draft analysis of this area occurred in August 1982. Because of the 1982 decision of the Secretary of

the Interior, the area was not among those listed in the brochure used for the 1984 EIS scoping meetings (USDI, BLM, 1984c); however, the specific issues and concerns expressed earlier apply. Since this WSA is adjacent to a potential wilderness area in Capitol Reef National Park, the following additional issues were raised:

1. *Comment:* Will designation of the WSA as wilderness benefit the values and uses of the adjacent proposed wilderness?

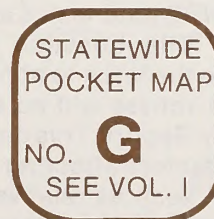
Response: According to the National Park Service's (NPS) assessment of the Fremont Gorge WSA, the WSA neither adds nor subtracts from the values of the adjacent NPS unit and is insignificant in terms of its value to the NPS area (USDI, NPS, 1984).

2. *Comment:* Would the WSA be a viable independent candidate for designation if Congress does not designate the contiguous lands?

Response: The WSA is under 5,000 acres in size and would not be a valid candidate for wilderness unless the contiguous NPS-proposed wilderness is designated by Congress.

3. *Comment:* Could the BLM portion be more effectively managed as wilderness if the management responsibility were transferred to the agency which administers the contiguous wilderness?

Response: The Fremont Gorge WSA could be managed by either the BLM or the NPS. The NPS has recommended that the WSA not be transferred from BLM to NPS administration because it would be insignificant in terms of its value and contribution to the NPS area (USDI, NPS, 1984).



DESCRIPTION OF THE ALTERNATIVES

Alternatives Considered and Eliminated From Detailed Study

Transfer of several WSAs, including the Fremont Gorge WSA, to NPS administration in adjacent NPS units has been proposed (H.R. 1214, 1984). Such a transfer could occur in the future regardless of wilderness status.

Because of the possibility of management transfer from the BLM to the NPS, the EIS could include analysis of both BLM and NPS management with and without wilderness designation of the WSA. However, alternatives for transfer of jurisdiction from BLM to NPS are not analyzed in this EIS because: (1) BLM could continue to manage the WSA without wilderness designation or could manage the WSA as wilderness in conjunction with a contiguous NPS-administered wilderness; and (2) the outcome of the NPS wilderness proposals and H.R. 1214 are uncertain actions independent of the BLM wilderness review. The EIS addresses the basic question of wilderness designation of BLM-administered lands and the resultant environmental impacts. Transfer of jurisdiction is considered by BLM to be a separate matter that would be evaluated on its own merits and could be implemented with or without wilderness designation.

It is noted that, in cases where lands contiguous to a BLM WSA are proposed as wilderness by another Federal agency, the BLM "Wilderness Study Policy" requires to determine in its Wilderness Study Report (1) whether the WSA would be a viable independent candidate for designation as wilderness if Congress does not designate the contiguous land; and (2) if the WSA were designated as wilderness, whether the BLM portion could be more effectively managed by the agency which administers the contiguous wilderness area.

BLM has determined that the Fremont Gorge WSA would not be a viable independent wilderness area if adjacent NPS land is not also designated as wilderness. The question of which agency should manage the WSA to achieve overall management effectiveness will be addressed in the Wilderness Study Report. This decision will be based primarily on factors affecting both BLM and NPS jurisdictions, such as relative amounts of the total wilderness area administered by each agency, principal public ingress and exit points, agency staffing and workload in the region, and similar nonenvironmental items. Environmental

differences, if any, would be due to variations in BLM and NPS mandates and policies (e.g., national parks are closed to hunting while public lands are not) rather than from wilderness designation. These differences would exist with or without wilderness designation and, therefore, are not relevant to the analyses of impacts from wilderness designation.

No other alternatives, except those analyzed below, were identified for this WSA.

Alternatives Analyzed

Two alternatives are analyzed for this WSA: (1) No Action; and (2) All Wilderness (2,540 acres). A description of each alternative follows. Where management intentions have not been clearly identified, assumptions are made based on management projections under each alternative. These assumptions are indicated in each case.

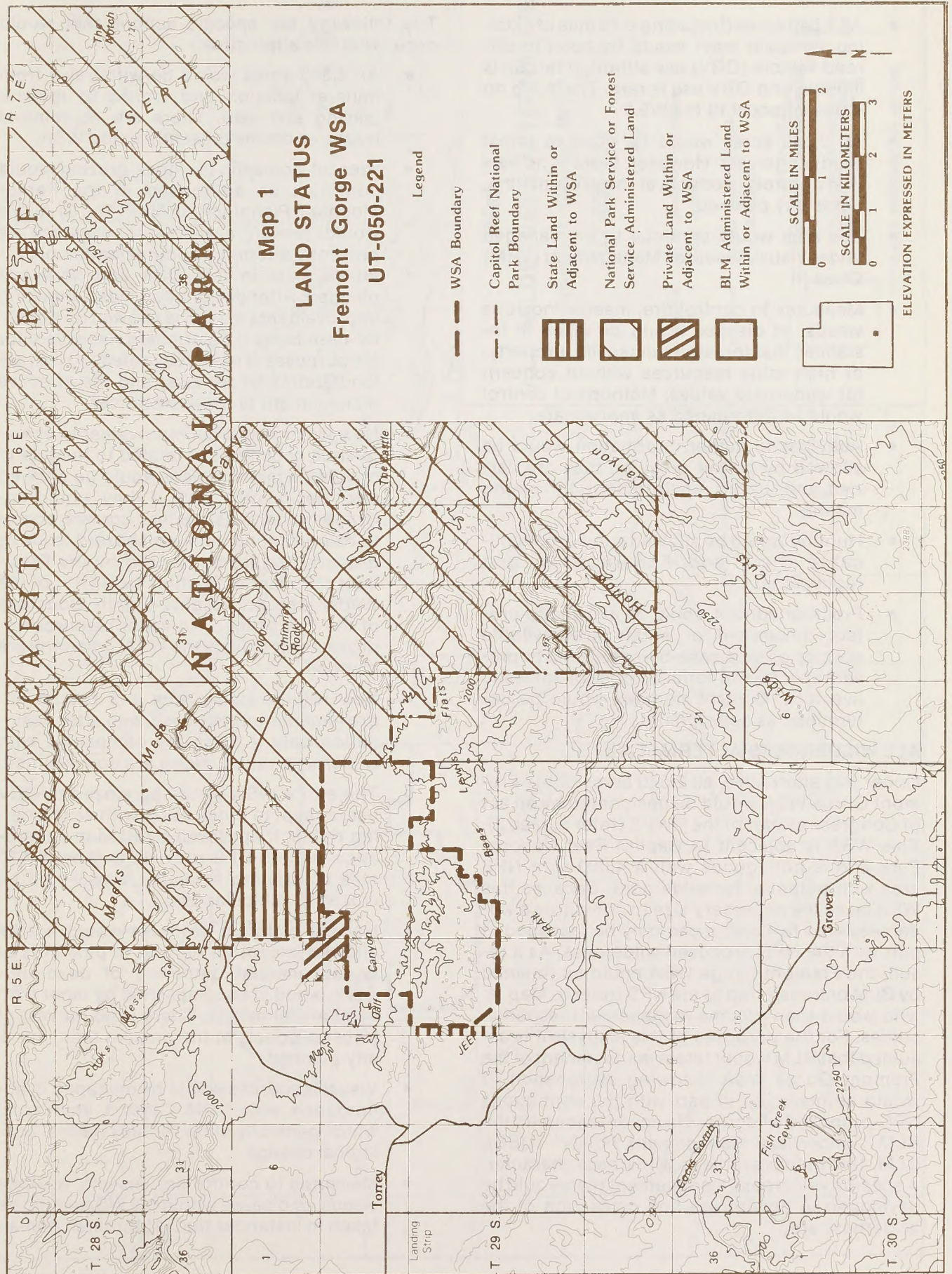
NO ACTION ALTERNATIVE (PROPOSED ACTION)

Under this alternative, none of the 2,540-acre Fremont Gorge WSA would be designated as part of the National Wilderness Preservation System (NWPS). The area would continue to be managed in accordance with the Parker Mountain Planning Unit Management Framework Plan (MFP) (USDI, BLM, 1978). There are no State, private, or split estate lands located within the WSA (refer to Map 1).

The following are specific actions that would occur under this alternative.

- All 2,540 acres would remain open to mineral leasing and sale. There are no leases in the WSA but future leasing could occur under Category 2 (standard and special stipulations). Building stone permits could be issued for the WSA. There are no mining claims in the WSA; however, development work, extraction, and possible patenting would be allowed on future mining claims.
- The present domestic livestock grazing use in the area would continue as authorized in the MFP (81 Animal Unit Months [AUMs]). There are no livestock improvements in the WSA. New rangeland improvements could be implemented without wilderness considerations, although none are presently planned.
- Developments for wildlife, water resources, etc. would be allowed without wilderness consideration if in conformance with the MFP. However, no rangeland improvements are in existence nor are any planned for this WSA.

FREMONT GORGE WSA



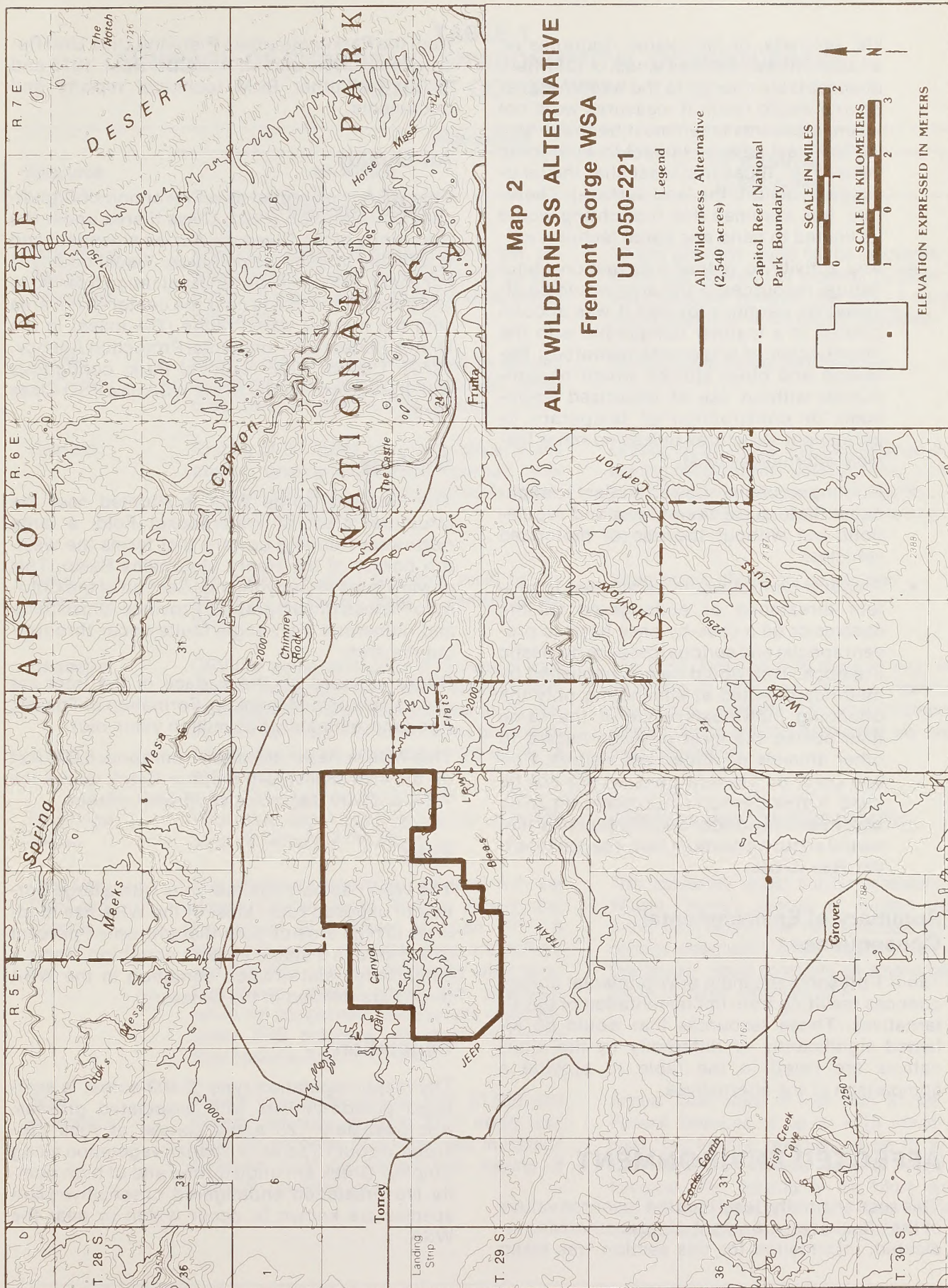
- All 2,540 acres (including 0.75 mile of existing vehicular way) would be open to off-road vehicle (ORV) use although terrain is limiting and ORV use is rare. There are no roads adjacent to the WSA.
- All 2,540 acres would be open to forest product harvest. However, there is no harvest of forest products at the present time, nor is any planned.
- The area would continue to be managed under Visual Resource Management (VRM) Class III.
- Measures to control fire, insects, noxious weeds, or disease would be taken in instances that threaten human life, property, or high-value resources without concern for wilderness values. Methods of control would be determined as appropriate.
- Activities to gather information would be allowed by permit provided they are carried out in an environmentally sound manner.
- Hunting would be allowed subject to applicable State and Federal laws and regulations.
- Predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. Control methods would be determined as appropriate.

ALL WILDERNESS ALTERNATIVE

Under this alternative, all 2,540 acres of the Fremont Gorge WSA would be designated by an act of Congress as part of the NWPS (refer to Map 2). This WSA is adjacent to Capitol Reef National Park and is contiguous with a 4,060-acre NPS area with potential for wilderness. Because this WSA lacks the necessary size to constitute a wilderness area by itself, it can only be managed in part with the NPS-proposed wilderness. As a result, the Fremont Gorge WSA could be retained by BLM or transferred to the NPS (refer to Map 1), who would then assume management responsibilities. For the purposes of this analysis it is assumed that BLM would retain management of the Fremont Gorge WSA following designation. It would be managed in part with the contiguous NPS-proposed wilderness in accordance with the BLM "Wilderness Management Policy" (USDI, BLM, 1981b) to preserve its wilderness character. A specific wilderness management plan would be developed to govern use and protection of the wilderness area.

The following are specific actions that would occur with this alternative:

- All 2,540 acres would be withdrawn from mineral location and closed to mineral leasing and sale. There are no mineral leases or claims presently in the WSA.
- Present domestic livestock grazing would continue, as authorized in the Parker Mountain Planning Unit MFP. The 81 AUMs would remain available to livestock as presently allotted. No rangeland improvements exist in this WSA and none are planned. After designation, new rangeland improvements would be allowed on a case-by-case basis if determined necessary for the purposes of resource protection (rangeland and/or wilderness) and the effective management of these resources.
- New water resource improvements or watershed activities not related to rangeland or wildlife management would be allowed after designation only if they would enhance wilderness values, correct conditions presenting imminent hazard to life or property, or are authorized by the President pursuant to Section 4(d)(4)(1) of the *Wilderness Act* (Eighty-Eighth Congress of the U.S., 1964). No water resource improvements exist in the WSA, and none are planned.
- New wildlife transplants and habitat improvements would be allowed after designation only if these are compatible with wilderness values. None are now planned.
- The entire WSA would be closed to ORV use, except to those users with valid existing rights, if approved by BLM in accordance with 43 CFR provisions. About 0.75 mile of existing vehicular way would be closed to vehicular use.
- Harvest of forest products would not be allowed except for harvest of pine nuts or noncommercial gathering of dead-and-down wood, if accomplished by other than mechanical means. There is no harvest of forest products at the present time, nor is any planned.
- Visual resources would be managed in accordance with VRM Class I standards, which generally allow for only natural ecological change.
- Measures to control fire, insects, noxious weeds, or disease within the WSA would be taken in instances that (1) threaten human



life, property, or high-value resources on adjacent nonwilderness lands; or (2) where unacceptable change to the wilderness resource would result if measures were not taken. Measures taken must be those having the least adverse impact to wilderness values (i.e., those that least alter the landscape or disturb the land surface). Therefore, it is assumed that firefighting would be limited to hand and aerial techniques.

- Any activity to gather information about natural resources in the area would be allowed by permit, provided it was accomplished in a manner compatible with the preservation of wilderness resources. Research and other studies would be conducted without use of motorized equipment or construction of temporary or permanent structures unless no other feasible alternatives exist.
- Hunting would be allowed subject to applicable State and Federal laws and regulations but without the use of motorized vehicles.
- Predator control would be allowed to protect threatened or endangered wildlife species or on a case-by-case basis to prevent special and serious losses of domestic livestock. This would be accomplished by methods directed at eliminating only the offending individuals while at the same time posing the least possible hazard to other animals or wilderness visitors. Poison baits or cyanide guns would not be used. A predator control program would be approved only under such conditions that would ensure minimum disturbance to wilderness values.

Summary of Environmental Consequences

Table 1 presents the main environmental consequences resulting from implementation of the alternatives. Those resources that would be affected significantly or differently by the alternatives are listed in the table to provide a comparison of the alternatives.

AFFECTED ENVIRONMENT

This section briefly describes the resource values of the affected environment. Unless otherwise indicated, information for this section was taken

from the Parker Mountain Planning Unit, Unit Resource Analysis and MFP (USDI, BLM, 1975 and 1978) and other BLM technical reports and documents.

Air Quality

This WSA is classified as a Prevention of Significant Deterioration (PSD) Class II area under the provisions of the Clean Air Act, as amended, and is affected little by air pollution. Visual quality is excellent, with an average visual range from 90 to 130 miles. The WSA is near the center of the area with the highest visual range (70+ miles) in the United States (Environmental Protection Agency, 1979). Capitol Reef National Park, contiguous with the eastern border of the WSA, is a PSD Class I area.

Geology

The Fremont Gorge WSA is situated near the structural crest of Waterpocket Fold, a large northwest-trending upwarp that forms the western border of the Henry Mountains Basin. This upwarp is in the Canyonlands Section of the Colorado Plateau Physiographic Province. Small folds and numerous high-angle faults occur throughout the area.

Rocks exposed on the surface of the tract are exclusively of the Moenkopi Formation of Triassic Age (approximately 225 million years old).

This WSA varies in elevation from about 6,000 feet on the east side where Sulphur Creek leaves the WSA to 6,800 feet in the southwest portion.

Soils

The WSA has only shallow soils with a large portion of exposed rock. Most of the WSA has moderate to high erosion potential with only 1 percent of the area in a stable erosion condition. Table 2 summarizes soil erosion condition in the WSA (terms are defined in the Glossary).

Vegetation

The major vegetation type (2,400 acres) is scattered pinyon-juniper with associated grasses. Approximately 125 acres consist of rock outcrops. About 15 acres of riparian vegetation along Sulphur Creek are undisturbed and of high quality. No threatened, endangered, or sensitive plant species are known to occur within or near the WSA.

TABLE 1
SUMMARY OF SIGNIFICANT ENVIRONMENTAL CONSEQUENCES
FREMONT GORGE WSA

Resource	Alternatives	
	No Action (Proposed Action)	All Wilderness (2,540 Acres)
Mineral and Energy Resources	Although likelihood of development is low, potential recovery could be achieved for up to 3 million barrels of oil and 18 billion cubic feet of natural gas.	Oil and gas likely would not be recovered. Due to the low likelihood of recovery of these mineral resources, however, the loss of development opportunity would not be significant.
Wildlife	About 6 percent of the WSA could be affected by mineral and energy development, which could adversely affect wildlife habitat.	Wildlife would benefit from solitude.
Livestock	Grazing of 81 AUMs and maintenance of any existing developments would continue. New developments could be implemented; however, none are now proposed.	Grazing of 81 AUMs and maintenance of any existing developments would continue. Little effect on grazing management is expected. New developments proposed in the future might not be allowed.
Visual Resources	The quality of visual resources could be impaired on up to 160 acres (6 percent of the WSA).	Visual quality should not be impaired.
Recreation	ORV use would continue on 0.75 miles of way. Overall recreational use could increase from the present 50 visitor days per year to 75 over the next 20 years. Up to 160 acres of mineral-related disturbance could reduce the quality of primitive recreation.	The WSA, including 0.75 miles of way, would be closed to ORV use. Primitive recreational use could increase by an undetermined amount due to publicity associated with wilderness designation.
Wilderness Values	Wilderness values could be lost on up to 160 acres (6 percent of the WSA).	Wilderness values would be protected.
Land Use Plans and Controls	This alternative would be consistent with the <i>Wayne County Master Planning Project</i> , and the current BLM Parker Mountain MFP. It would not conflict with State plans and policies and the NPS proposal for nearby wilderness. Disturbance allowed under this alternative would not complement management of the adjacent NPS proposed wilderness in Capitol Reef National Park.	This alternative would not be consistent with Wayne County's concept of multiple use. It would complement the NPS proposal for wilderness designation of the adjacent NPS unit. Designation would constitute an amendment of the BLM Parker Mountain MFP.
Socio-economics	Annual local sales of less than \$1,825 and Federal revenues of up to \$113 would continue. An additional \$7,620 per year in Federal revenues could be derived from leasing of presently unleased areas.	Annual local sales of less than \$1,825 and Federal revenues of up to \$113 would continue, but Federal revenues of up to \$7,620 from additional mineral leasing would be foregone. The opportunity for future energy and mineral development and local economic benefits would be reduced in the WSA.

TABLE 2
Erosion Condition

Classification	Annual Soil Loss per Acre (cubic yard/acre)	Acres	Percent of WSA	Total Annual Soil Loss for WSA (cubic yard)
Severe	5.4	0	0	0
Critical	2.7	254	10	686
Moderate	1.3	1,067	42	1,387
Slight	0.6	1,194	47	716
Stable	0.3	25	1	8
Total		2,540	100	3,991

Sources: USDI, BLM, 1975; Leifeste, 1978.

The Fremont Gorge WSA lies in the Colorado Plateau Province Ecoregion as shown on the Bailey-Kuchler ecosystems map (USDI, Geological Survey, 1978). The potential natural vegetation (PNV) type of the WSA is juniper-pinyon woodland. PNV is the vegetation that would exist if plant succession were allowed to reach climax without human interference. It does not necessarily reflect the actual vegetation present. PNV is an important object of research because it reveals the biological potential of a site.

Water Resources

The only surface water in the WSA is about 2 miles of Sulphur Creek, a perennial stream. Several drainages lead into Sulphur Creek Canyon which is prone to flash flooding between July and October. The water quality of Sulphur Creek is not generally fit for human consumption. There is no potential for wells or underground water in the WSA.

Mineral and Energy Resources

The BLM, in consultation with the U.S. Department of Energy, had each WSA within Utah independently assessed for its mineral and energy resources by Science Applications, Inc. (SAI, 1982). Refer to Appendix 5 for a detailed description of the SAI rating system.

The potential for mineral resources in this WSA is low to none due to the generally unfavorable geologic environment.

An overall importance rating (OIR) of 1 was assigned to the Fremont Gorge WSA by SAI (1982). The OIR is given on a scale of 1 to 4, where 4 is equated with high mineral importance. The OIR attempts to integrate the individual mineral resource evaluations for a tract with other data, such as gross economics or the proposed loca-

tion of energy corridors, into a summary number that reflects an overall assessment of the resource importance of the WSA.

If the WSA is recommended as suitable for wilderness, its mineral importance will be reviewed by the USDI, Geological Survey and the Bureau of Mines in an independent mineral investigation report for the WSA. Reports will be made available to the public and will be submitted to the President and Congress as required by FLPMA. BLM and the Secretary of the Interior will also consider these reports prior to making final wilderness recommendations.

All resources were assigned favorabilities of f1 with the exception of oil and gas which is rated as f2. The estimated mineral and energy resource rating summary is given in Table 3.

The Strategic and Critical Materials Stock Piling Act, as amended, provides that strategic and critical materials be identified and stockpiled in the interest of national defense to prevent a costly and dangerous dependence on foreign sources in time of a national emergency. The Act defines strategic and critical materials as those needed to supply military, industrial, and essential civilian needs during a national emergency but that are not found or produced in the United States in sufficient quantities to meet such a need. The WSA does not contain deposits of materials currently listed or strategic and critical (Federal Emergency Management Agency, 1983).

TABLE 3
Mineral and Energy Resource Rating Summary

Resource	Rating		Estimated Resource
	Favorability ¹	Certainty ²	
Oil and Gas	f2	c1	Less than 10 million barrels of oil; less than 60 billion cubic feet of gas
Copper	f1	c1	Little to none
Uranium	f1	c1	Little to none
Coal	f1	c4	None
Geothermal	f1	c3	None or low temperature
Hydropower	f1	c4	None

Source: SAI, 1982.

¹Favorability of the WSA's geologic environment for a resource (f1 = lowest, f4 = highest).

²Degree of certainty that the resource exists within the WSA (c1 = lowest, c4 = highest).

LEASABLE MINERALS

There are no known deposits of leasable minerals occurring within the Fremont Gorge WSA. Oil and

gas could occur within the WSA but there are no leases or active exploration, drilling, or mining activities for leasable minerals in the WSA.

Oil and Gas

None of the WSA has been leased for oil and gas. The MFP for this area places all 2,540 acres in Category 2 (open to leasing with standard and special stipulations). Special stipulations would be applied to protect riparian vegetation.

The geology of the Fremont Gorge WSA is not highly favorable for oil and gas. Wells drilled along the crest of the Waterpocket Fold in the vicinity of the tract have not been successful. However, numerous folds in the vicinity of the WSA have not been adequately tested and the WSA could contain at least some small oil and gas accumulations (SAI, 1982). Reserves, if any, are probably less than 10 million barrels of in-place oil or 60 billion cubic feet of natural gas, of which approximately 3 million barrels of oil or 18 billion cubic feet of natural gas would be recoverable. (Refer to Appendix 6 for estimates of recoverability.)

LOCATABLE MINERALS

There are no known commercial deposits of locatable minerals in the Fremont Gorge WSA. There are no mineral claims or production in the WSA. The favorability and certainty ratings indicate that future claims would likely be determined invalid.

SALABLE MINERALS

There are excellent deposits of building stone in the Moenkopi Formation. There are no active operations involving removable salable materials, and demand is expected to be met by sources adjacent to the WSA.

Wildlife

Animals in the WSA include mule deer, rabbit, squirrel, coyote, fox, and badger. Several species of birds are found along Sulphur Creek depending upon the season of the year. While no peregrine falcon nesting areas have been identified in the WSA, there are nesting areas in the adjacent Capitol Reef National Park. Sulphur Creek Canyon provides additional suitable nesting sites. Peregrine falcon and bald eagle, both endangered species, are likely to inhabit the WSA. No other sensitive animal species are known to inhabit the WSA. No fish inhabit the portion of Sulphur Creek in the WSA. All of the WSA is critical deer winter range. There are no existing wildlife management facilities in the WSA and none are planned.

Forest Resources

Forest resources are limited to areas of generally widely scattered pinyon-juniper. Much of the WSA is bare rock. Due to the remote location of the WSA, difficulty of access, lack of demand (no known harvest), and general absence of trees, forest resources are not significant in the WSA.

Livestock and Wild Horses/Burros

This WSA contains parts of the Torrey Town BLM grazing allotment with five permittees. There are an estimated 81 AUMs of livestock forage within the WSA. Because of rugged terrain, livestock use is restricted to the benchlands on the margins of the WSA. Livestock do not use the Sulphur Creek Canyon because of the lack of access.

There are no existing or proposed rangeland improvements in the WSA. No areas have been identified as having vegetation manipulation potential to increase AUMs. The estimated 81 AUMs of livestock forage now permitted represent 1 percent of the total AUMs in the Torrey Town Allotment.

No wild horses or burros range within the WSA.

Visual Resources

Scenic quality is above average throughout the WSA due to high, colorful canyon walls and riparian vegetation in the Sulphur Creek drainage and side canyons.

The area is not visible from any major travel routes. All 2,540 acres are B Class scenery and are managed as VRM Class III. Appendix 7 explains BLM's VRM rating system.

Cultural Resources

There are no known archaeological or historical sites within this WSA. However, there is a variety of sites outside the WSA boundaries ranging from temporary campsites to villages and rock art sites. Therefore, the WSA is thought to have a high potential for the discovery of sites.

Recreation

Fifteen recreational opportunities (backpacking, camping, dayhiking, fishing, horseback riding, hunting, nature study, photography, rock climbing, rock hounding, skiing; also, archaeological, geological, wildlife, and scenic sightseeing) were evaluated for their quality in this WSA. Ten opportunities were present in varying degrees. No op-

FREMONT GORGE WSA

portunities were considered outstanding in quality. Four activities (i.e., dayhiking, nature study, photography, and geologic sightseeing) are of average quality.

The size and terrain of the WSA does not lend itself to long overnight trips. However, there is some overnight potential for novice hikers or families with small children. The area has good access and connects with a route leading to the Capitol Reef National Park Visitor Center.

Size and terrain do contribute to good opportunities for dayhiking; half day trips are possible if a car shuttle is used.

Photography and geologic sightseeing are enhanced by the colorful rock walls, riparian vegetation, and seasonal waterfalls.

Visitor use is estimated at under 50 visitor days per year (1980), none of which is commercial or related to use of ORVs.

Wilderness Values

SIZE

This WSA contains 2,540 acres. It extends along Sulphur Creek and is approximately 3 miles wide (east to west) and up to 2 miles long (north to south) (refer to Map 1). The WSA is under 5,000 acres but is eligible for wilderness consideration because it is contiguous with 2,115 acres recommended for wilderness by the NPS. Surrounding the NPS-recommended area is a 1,945-acre potential wilderness addition.

NATURALNESS

All of the Fremont Gorge WSA is in a natural condition. There is only 0.75 mile of substantial unnoticeable vehicular way.

SOLITUDE

Opportunities to find solitude (i.e., a secluded spot away from others) within the WSA are influenced by size, topography, vegetation, and the absence of distracting sights and sounds.

Although the WSA is of comparatively small size, several winding canyons up to 200 feet deep in the Sulphur Creek and Calf Creek drainages contribute to the opportunities for solitude. The scattered pinyon-juniper vegetation does not enhance opportunities for solitude. There are no outside sights and sounds that would have an adverse effect on solitude anywhere in the WSA.

These factors, when considered together, indicate that the entire WSA meets the criteria for outstanding opportunity for solitude.

PRIMITIVE AND UNCONFINED RECREATION

Opportunities for primitive, unconfined recreation were evaluated by considering miles of potential hiking routes in relationship to the WSA's size, the number of recreational opportunities present, and an evaluation of the quality of these opportunities. This WSA was determined to have opportunities for 10 different activities. Hiking, photography, and geological sightseeing were determined to be of average quality; the remaining activities are below average quality. The overall quality of the opportunities for primitive, unconfined recreation is below average and does not meet the criteria for outstanding opportunities for primitive and unconfined recreation.

SPECIAL FEATURES

The special features identified in this WSA during the *BLM Intensive Wilderness Inventory* (USDI, BLM, 1980) are scenic, botanic, and ecologic. Ecological and botanical values are related to a high quality riparian habitat along Sulphur Creek.

Land Use Plans and Controls

There are no State lands, private in-holdings, rights-of-way, or private subsurface rights within the WSA. Except for minor amounts of livestock grazing, no extensive land use activities are presently occurring in this WSA.

The WSA is entirely within Wayne County. The *Final Report, Wayne County Master Planning Project* (Call Engineering, Inc., 1976) does not identify recommendations at specific locations. The plan recognizes that "... outstanding natural landmarks should be preserved as much as possible." However, it also states that "Open spaces should be used for many purposes rather than strictly as wilderness areas."

The WSA is managed under the BLM Parker Mountain Planning Unit MFP which allows multiple use with certain restrictions on surface occupancy for oil and gas to protect riparian vegetation as described for the No Action Alternative. The Parker Mountain MFP has not been reviewed by the Governor of Utah for consistency with State plans. The Fremont Gorge WSA is contiguous with 4,060 acres in Capitol Reef National Park that are under consideration by NPS for wilderness values. In 1984, the House Subcommittee on Public Lands and National Parks conducted a hearing on H.R. 1214, a bill designed to transfer jurisdiction of certain lands, including the Fremont Gorge WSA, from the BLM to the NPS. In response to the hearing, the NPS evaluated the Fremont Gorge WSA to determine its values for

potential addition to the adjacent NPS unit. The NPS dropped the WSA from further consideration and concluded that, should the Fremont Gorge WSA be added to the Park unit, it would only be considered a minor buffer addition to the current Park boundary (USDI, NPS, 1984). Such an addition would be insignificant in terms of its value and contribution to the NPS area.

Socioeconomics

DEMOGRAPHICS

The WSA lies within the boundaries of Wayne County, one of Utah's least populated and most rural counties. In 1980, the Wayne County population was 1,911, reflecting a population density of 0.77 persons per square mile (U.S. Department of Commerce [USDC], Bureau of the Census, 1983, and University of Utah, Bureau of Economic and Business Research, 1979).

The closest community to the WSA is Torrey, a small community of approximately 96 people, located about 3 air miles to the west.

EMPLOYMENT

Wayne County is one of the poorest counties in the State of Utah (South et al., 1983). Government employment represents the largest employment sector within the county, with agriculture a close second and a dominant economic activity of the area. Nonfarm proprietors represent the third largest sector of county employment (refer to Table 4). The county has some tourism and lumber activities; however, the principal commercial center and gateway to the WSA is Richfield, Utah, located in Sevier County (South et al., 1983) approximately 75 road miles to the west. Loa (the county seat of Wayne County) and Bicknell, 22 to 15 miles from the WSA, respectively, also offer services for visitors to the WSA.

INCOME AND REVENUES

In 1980, the nonfarm industry sector in Wayne County produced nearly 89 percent or \$7.3 million of total labor and proprietors' income within the county. This represented an annual growth rate of 17.4 percent between 1975 and 1980, higher than the 13.9-percent growth rate experienced by the State (refer to Table 5). Within this total income, the private sector produced 72 percent of these earnings (mainly from mining and construction) and the government sector produced 28 percent. Farm labor and proprietors' income totaled \$0.9 million or 11.1 percent of total personal earnings (University of Utah, Bureau of Economic and Business Review, 1982).

TABLE 4
1980 Employment
Wayne County, Utah

Industrial Sector	Number Employed	Percent
Agriculture	191	25
Mining	9	1
Construction	84	11
Manufacturing	37	5
Transportation, Communication, and Utilities	3	--
Whole and Retail Trade	42	5
Finance, Insurance, and Real Estate	12	2
Services	31	4
Government	207	27
Nonfarm Proprietors	152	20
Total	768	100

Sources: Utah Department of Employment Security, 1982; USDC, Bureau of Economic Analysis, 1982.

TABLE 5
1980 Personal Income and Earnings
Wayne County, Utah

Type/Source	Earnings Income (in \$1,000)	Components as Percent of Totals	Annual Growth Rate 1975-80 (Percent)
Total Labor and Proprietors' Income (Earnings)	8,245	100.0	17.5
Total Labor and Proprietors' Income by Industry Source			
Farm	917	11.1	16.6
Nonfarm	7,328	88.9	17.4
Private	5,268	71.9	22.7
Agricultural	81	1.1	(D)
Service and Other			
Mining	(D)	1(D)	(D)
Construction	(D)	1(D)	(D)
Manufacturing	291	3.9	4.1
Transportation and Public Utilities	183	2.5	0.9
Wholesale Trade	69	0.9	1.8
Retail Trade	496	6.8	3.4
Finance, Insurance and Real Estate	(D)	(D)	(D)
Services	416	5.7	11.1
Government	2,060	28.1	8.2

Sources: USDC, Bureau of Economic Analysis, 1982; University of Utah, Bureau of Economic and Business Review, 1982.

¹Earning components as a percent of total earnings.

²Earning components as a percent of total earnings.

³Earning components as a percent of incremental earnings within private sector.

(D) Not shown to avoid disclosure of confidential information or for items \$50,000 or less. Data are included in totals.

Economic-related activities in the WSA include livestock production and recreation. Table 6 summarizes local income (sales) and Federal revenues from the WSA. Appendix 9 identifies the multipliers used to estimate income and revenues.

No mining claims, leases, or exploration activities occur within the WSA.

One livestock operator has a total grazing privilege of 81 AUMs within the WSA. If all this forage were utilized, it would account for \$1,620 of livestock sales and \$405 of ranchers' returns to labor and investment.

The WSA's nonmotorized recreational use and related local expenditures are low. These expenditures are insignificant to both the local economy and individual businesses. The actual amount of income generated locally from recreational use in the WSA is unknown. However, an approximate range of expenditures can be deduced from Dalton (1982). This study indicates that statewide average expenditures per recreational visitor day for all types of recreation in Utah are approximately \$4.10. The recreational use for Fremont Gorge WSA is estimated as about 50 visitor days/year. Only a portion of the expenditures for recreational use of the WSA contributes to the local economy of Wayne County.

The WSA generates Federal revenues from livestock grazing (refer to Table 6). Average actual livestock use and, therefore, revenues generated from grazing in the WSA are unknown; however, the permittee in the WSA can use up to 81 AUMs per year. Based on a \$1.40 per AUM grazing fee, the WSA can potentially generate \$113 of grazing fee revenues annually, 50 percent of which would be allocated back to the local BLM district for the construction of rangeland improvements.

TABLE 6
Local Sales And Federal Revenues

Source	Annual Local Sales ¹	Annual Federal Revenues
Oil and Gas Leases	None	None
Mining Claim Assessment	None	None
Livestock Grazing	\$1,620	\$113
Recreational Use	Less than \$205	None
Total	Less than \$1,825	Up to \$113

Sources: BLM File Data; Appendix 9.

¹Local sales represent money potentially spent. They do not account for the total income that would be generated by these expenditures.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

Analysis Assumptions and Guidelines for All Alternatives

1. The alternatives would be carried out as discussed in the Description of the Alternatives section.
2. Future users in the WSA would meet requirements for all applicable Federal, State, and local permits.
3. Designation of an area as wilderness would not result in impacts due to direct disturbance of resources. Any direct disturbance of resources under wilderness designation would result from use of prior rights that must be recognized by BLM. Such disturbance could occur with or without wilderness designation and is assumed to occur at one time.
4. The impacts of wilderness designation would result from (1) protection of certain resources; (2) denial of the opportunity to develop certain resources; or (3) restrictions placed on or changes in allowable management practices and land uses.
5. Estimates of in-place mineral resources are given based on a mineral resource evaluation of BLM WSAs by SAI (1982). These estimates were based on literature studies and known mining activities in the vicinity of the WSAs. The analysis presented in this section identifies the estimated amount of potentially recoverable mineral resources and then, using BLM's field experience and judgment, qualifies the probability of future development based on terrain, transportation, and economic factors. Appendix 6 records the methodology for estimation of potentially recoverable mineral resources.
6. Once designated, management of an area as wilderness would continue in perpetuity.

No Action Alternative (Proposed Action)

The major changes that could occur in the WSA in the future would be related to oil and gas and locatable mineral exploration and development. The area would be open to resource use and development without controls for wilderness protection. The degree of future development is unknown but would probably be low due to the

WSA's rough terrain and low resource potential. The following is based on the assumption that oil and gas would be developed sometime in the future and would result in 160 acres of disturbance. (Appendix 10 lists mineral-related surface disturbance assumptions and estimates.) Because there is little or no potential for locatable minerals in the WSA and there are no mining claims in the unit, it is assumed that no mineral production will occur.

AIR QUALITY

The WSA would continue to be managed by the State of Utah as a PSD Class II area. Air quality could be reduced up to the PSD Class II limitations; however, the proximity of the WSA to Capitol Reef National Park may result in restriction of oil and gas development to meet PSD Class I limitations. Disturbance of 160 acres would result in only minor increases in fugitive dust emissions.

GEOLOGY

No impacts to geology are expected because surface disturbances associated with oil and gas exploration and development activities would probably not exceed 160 acres (6 percent of this small WSA). This would not significantly affect geology.

SOILS

Surface disturbance from oil and gas exploration and development would leave the soil susceptible to increased erosion on up to 160 acres. Assuming that all disturbance would occur in areas with critical erosion class (worst-case analysis) and that erosion condition would increase one class, soil loss on the 160 acres would increase from 432 cubic yards/year to 864 cubic yards/year. Soil loss would decrease as reclamation occurred. However, the time required for complete reclamation cannot be determined. Therefore, under this alternative, maximum annual soil loss from surface disturbance in the WSA would increase an estimated 432 cubic yards (11-percent increase over current annual soil loss). Because restrictive conditions would be placed on oil and gas leases to protect riparian vegetation (Category 2), disturbance would be located away from Sulphur Creek and increases in erosion would not have a measurable effect on the water quality of Sulphur Creek.

VEGETATION

The anticipated maximum of 160 acres (6 percent of the WSA) disturbed would not significantly impact the WSA's sparse pinyon-juniper vegetation. Under this alternative, protection and restoration of vegetation would be provided through management under the Parker Mountain Planning Unit MFP.

WATER RESOURCES

No significant sedimentation or change in total dissolved solids (TDS) is expected to occur from the estimated 432 cubic yards of annual soil loss from surface disturbance on up to 160 acres. Mitigation would reduce sediment yield to even lower levels over time. There is little or no potential for ground water in the WSA.

Oil and gas exploration and development in the area would generally be with widely spaced wells and would not significantly impact ground water.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

Oil and gas could be explored and developed in the WSA subject to Category 2 stipulations. Oil and gas exploration and development would not be affected by the adoption of this alternative. The potential deposits within the WSA are 10 million barrels of oil in-place (3 million estimated recoverable) or less than 60 billion cubic feet of natural gas (18 billion cubic feet estimated recoverable). Approximately 160 acres of surface disturbance could take place within the WSA if exploration and development were to occur. However, due to the small size of these deposits and generally unfavorable geology, production is unlikely under this alternative.

Locatable Minerals

Locatable mineral development would be allowed within the WSA. All 2,540 acres in the WSA would remain open to mineral location. However, the probability of economic extraction of locatable minerals is thought to be minimal mainly because of extremely low mineral potential and because of economic considerations (e.g., lack of access and high transportation costs).

Salable Minerals

The WSA would be open to mineral sales for building stone. Because of the availability of the stone outside the WSA and lack of access, no quarrying of building stone is expected in the WSA.

WILDLIFE

Disturbance of an estimated 160 acres (6 percent of the WSA) through oil and gas exploration and development would disrupt wildlife. Deer and mobile nongame animals would be dispersed from the disturbed area for the lifetime of these activities. Deer could be forced to leave critical winter range and a small number of deer could die due to stress. Less mobile wildlife would either perish or co-exist with these disturbances at smaller and less viable population levels. Pere-

grine falcons and bald eagles (endangered species) would also avoid the disturbed area. Prior to authorization of surface-disturbing activities, the BLM would conduct site-specific clearances of the potentially disturbed areas and informally consult with the Fish and Wildlife Service (FWS) as required by BLM policy (refer to Appendix 4). If the peregrine falcon or bald eagle could be affected, BLM would initiate formal Section 7 consultation with the FWS under provisions of the Endangered Species Act. Appropriate mitigating measures would be applied. Because necessary measures would be taken to protect these species, it can be concluded that the viability of populations of peregrine falcon and bald eagle would be preserved under the No Action Alternative.

FOREST RESOURCES

Since there are few trees other than scattered pinyon and juniper, none of which are utilized (except by occasional campers or hikers), and since minimal surface-disturbing activities are anticipated, no significant loss or harvest of forest resources is expected.

LIVESTOCK

Domestic livestock grazing would continue as authorized in the Parker Mountain Planning Unit MFP. The 81 AUMs currently allocated in the WSA are controlled by one livestock permittee. There are no existing or proposed rangeland improvements in the WSA, but additional roads or other facilities for livestock handling could be proposed and developed in the future without regard for wilderness values. Since motorized vehicles are not used to manage livestock in the WSA few, if any, changes in livestock management techniques are expected. Oil and gas related disturbance could result in short-term loss of livestock forage.

VISUAL RESOURCES

Scenic values in the area would continue to be managed under VRM Class III guidelines. Scenic values in areas affected by an estimated 160 acres of surface disturbance could be degraded, but would probably meet VRM Class III objectives. Mitigative measures would be applied to minimize visual contrast created by intrusions, but visual quality would be degraded in localized areas during the period of activity. Even after rehabilitation, some permanent localized degradation would be expected. If roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis), visual quality could be significantly reduced in the WSA as a whole.

CULTURAL RESOURCES

There would be little or no impact to cultural re-

sources resulting from implementation of this alternative. Disturbance could occur and sites could be lost or damaged on up to 160 acres by oil and gas exploration and development. However, inventories for the purposes of site recordation and mitigation of impacts would take place prior to any and all proposed surface disturbance and would mitigate adverse impacts. Inadvertent loss or damage to cultural resources could occur; however, these impacts are expected to be minimal. Vandalism could become a problem with increased access from oil and gas exploration and would increase in proportion to the general population increase.

RECREATION

Primitive recreation values (hiking, camping, sightseeing, etc.) could be lost or impaired in areas affected by oil and gas exploration and development. The estimated 160 acres of surface disturbance that could occur would degrade naturalness, solitude, and scenic values in localized areas.

The future trend in recreational use of the WSA is unknown. However, based on a review of several projections (Utah Outdoor and Recreation Agency, 1980; Utah Office of Planning and Budget, 1984; Jungst, 1978; and Hof and Kaiser, 1981), it is estimated that outdoor recreation in Utah will increase at about 2 percent per year over the next 20 years. At this rate, overall recreational use is expected to increase from 50 current visitor days/year to 75 at the end of 20 years. Overflow from Capitol Reef National Park could further increase use.

The entire WSA, along with approximately 0.75 mile of vehicular way, would continue to be open to ORV use. If roads, vehicular ways, and drill pads for leases are located throughout the WSA (worst-case analysis), primitive recreational opportunities (less than outstanding) could be lost in the area altogether. However, roads and ways created for oil and gas exploration and development would improve access into the area for non-primitive recreation.

WILDERNESS VALUES

None of the WSA would be designated as wilderness. Management of the area would be under the current BLM Parker Mountain Planning Unit MFP. Wilderness characteristics in the WSA would be protected by some limitations placed on potential surface-disturbing activities. With all of the WSA open to oil and gas exploration and development, an estimated 160 acres could be subject to surface disturbance.

The related surface disturbance would result in a significant loss of naturalness and outstanding opportunities for solitude throughout the WSA as a whole if roads, vehicular ways, and drill pads are located throughout the area (worst-case analysis). The potential for oil and gas development and related disturbance is low in this WSA.

LAND USE PLANS AND CONTROLS

This alternative would be consistent with the *Wayne County Master Plan* which recommends "many uses [for] open spaces." The No Action Alternative is based on implementation of the current BLM Parker Mountain Planning Unit MFF and is, therefore, in conformance with it. The MFF has not been reviewed by the Governor of the State of Utah for consistency with State plans. There are no State lands within the WSA. The No Action Alternative is consistent with the NPS determination that addition of the Fremont Gorge WSA to the National Park System would not add significant values to the adjoining NPS unit. However, disturbance allowed with this alternative would not be complementary to management of the adjacent NPS-proposed wilderness.

SOCIOECONOMICS

There would not be a loss of local employment or income as a result of this alternative. The existing ability to explore and develop mineral resources would remain as at present. If the oil and gas in the WSA were developed, it would lead to increases in employment and income for Wayne County. However, the probability of economic development of oil and gas within the WSA is low (refer to the Mineral and Energy Resources section for a description of mineral and development potentials).

There would be no livestock-related economic losses because the existing grazing use (81 AUMs) and ability to maintain, replace, and build new range improvements would remain as at present. The forage use in the allotment would continue to produce \$1,620 annually in livestock sales and \$405 of ranchers' return to labor and investment.

As discussed in the Recreation section, recreational use and, therefore, recreation-related local expenditures, could increase at a rate of 2 percent or greater per year over the next 20 years (49-percent increase over 20 years). Because estimated recreational use in the area is presently only about 50 visitor days per year and overall recreation-related expenditures average only \$4.10 per visitor day (only a portion of which contributes to the local economy), recreation-related expenditures attributable to the WSA would likely remain insignificant to the local economy.

Federal and State revenues would not be reduced by this alternative. There are no leases on the 2,540 acres in the WSA. If leased, they would bring up to \$7,620 additional Federal lease fee revenues per year in addition to new royalties if oil and gas were produced. Half of these monies would be allocated to the State, a portion of which could reach the local economy.

Collection of livestock grazing fees (\$113 per year) would continue. About 50 percent of the grazing fees would continue to be returned to the local BLM office for use in range improvement projects.

All Wilderness Alternative (2,540 Acres)

As identified in the Description of the Alternatives section, the major changes that could occur in the 2,540-acre area would be related to its withdrawal from mineral location and closure to new mineral leasing and sale. The entire area would be placed in leasing Category 4 (closed to leasing). About 0.75 mile of existing vehicular way would be closed to vehicular use except for approvals by BLM as discussed in the Description of the Alternatives section. The WSA would be managed under VRM Class I.

For the following analysis, it is assumed that, because of extremely low locatable mineral potential, no mining claims would be filed, explored, or developed within the WSA. It is also assumed that existing oil and gas leases would expire before production of commercial quantities, and future leasing of oil and gas would not be allowed. Therefore, there would not be any mineral-related surface disturbance in the WSA following wilderness designation.

Because there would not be any surface disturbance with this alternative, there would not be direct impacts on any resources. Any effect on resources would result from changes in management. These effects are discussed below.

WATER RESOURCES

No water improvements exist or are planned within the WSA. There is no potential for ground water or a large reservoir in the WSA. Restrictions to protect wilderness values could prevent the development of water catchments or small reservoirs should any be proposed in the future.

MINERAL AND ENERGY RESOURCES

Leasable Minerals

There are no oil and gas leases in the WSA. If the area were designated wilderness it would be placed in a Category 4 status with no new leasing.

This would prevent future leasing and could prevent the exploration for and development of a potential resource of up to 10 million barrels of oil in-place (3 million recoverable) and 60 billion cubic feet of natural gas (18 billion recoverable). However, due to the small size of the potential deposits, the low certainty that these exist, and the low likelihood of exploration and development activities, it is concluded that this alternative would not result in a significant loss of recoverable oil and gas.

Locatable Minerals

There are no mining claims in the WSA; however, claims could be filed prior to designation. Development, extraction, and patenting would be allowed to continue on valid claims after wilderness designation under unnecessary or undue degradation guidelines. After that date, all other lands (including claims not determined valid) would be closed to prospecting and development (USDI, BLM, 1981b; USDI, NPS and BLM, 1984).

Because there is little or no potential for locatable minerals in the WSA and economic considerations (e.g., transportation costs, etc.) are unfavorable, it is unlikely that exploration or development will occur even without wilderness designation. Therefore, it is concluded that this alternative would not result in any significant loss of recoverable locatable mineral resources.

WILDLIFE

Wildlife would benefit from this alternative due to the preservation of solitude through reduction of potential surface-disturbing activities.

LIVESTOCK

Present domestic livestock grazing would continue as authorized in the Parker Mountain Planning Unit MFP. The 81 AUMs currently allocated in the WSA are controlled by five livestock permits. There are no existing or proposed rangeland improvements in the WSA and no areas are identified as having potential for increased forage through vegetation manipulation. New rangeland improvements would be allowed if determined necessary for the purposes of rangeland and/or wilderness protection and the effective management of these resources. However, development of future roads or other livestock management facilities for use with the 81 AUMs in the WSA could be restricted to preserve wilderness values. Because no improvements have been proposed in the WSA and motorized vehicles are not used in livestock management, little effect on the management of livestock grazing is expected. Wilderness designation would eliminate any short-term

loss of livestock forage due to oil and gas exploration and development that would occur with the No Action Alternative.

VISUAL RESOURCES

Wilderness designation would contribute to the preservation of the area's visual resources. Under this alternative, the potential for surface-disturbing activities that could impair visual quality would be reduced through management under VRM Class I (which generally allows for only natural ecological change), through continuation of the ORV closure, and through closure of the entire area to future mineral leasing and location. No surface disturbance is projected and visual quality would be preserved.

CULTURAL RESOURCES

There is a potential for increased vandalism to cultural resources due to increased recreational use of the WSA. However, protection afforded by wilderness management would outweigh any potential vandalism problems caused by recreational activity, and the overall impact would be positive.

RECREATION

Overall, recreation would benefit from this alternative. Although less than outstanding in quality, the opportunities for primitive recreation would be preserved by designation because the potential for surface-disturbing activities would be reduced or eliminated.

As discussed for the No Action Alternative, recreational use of the WSA is estimated to increase about 2 percent per year over the next 20 years in relation to population increases and current trends of recreational use. Publicity of the WSA that would likely follow wilderness designation could lead to an undetermined increase in primitive recreational use above the baseline rate as would the WSA's proximity to Capitol Reef National Park.

Management provided through a Wilderness Management Plan would control destructive increases in future recreation use and the quality of the primitive recreation experience would probably not be negatively affected.

Little impact on ORV recreational use would be expected due to the general lack of such activity in the area.

It is concluded that this alternative could benefit recreation by reducing the likelihood of surface-disturbing activities and increasing management's recognition of and attention to recreational values.

WILDERNESS VALUES

Wilderness designation and management would ensure the preservation of the wilderness characteristics of size, naturalness, outstanding opportunities for solitude, less than outstanding opportunities for primitive and unconfined recreation, and special features. Although recreational use could increase (refer to Recreation section), use would continue to be low.

LAND USE PLANS AND CONTROLS

The existing BLM Parker Mountain Planning Unit MFP does not provide for wilderness designation. Congressional designation of the WSA as wilderness would be an amendment to the Parker Mountain MFP.

The *Wayne County Master Plan* recommends multiple use of all public lands in the county. Wilderness designation would generally be consistent with the multiple-use concept because most resource uses would continue, although under more restrictive conditions. This alternative would conflict with the County's multiple-use concept because restrictive conditions would be placed on mineral development and oil and gas leases would be phased out. Wilderness designation of the Fremont Gorge WSA would neither add to nor subtract from the values of the adjacent NPS unit. The WSA would be considered a minor buffer to the boundary of Capitol Reef National Park and would be insignificant in terms of its value and contribution to the NPS area (USDI, NPS, 1984). However, prevention of disturbance with wilderness management would complement management of the adjacent NPS-proposed wilderness.

SOCIOECONOMICS

Overall, there would be no significant changes in current trends of population, employment, and local income distribution.

Because of restrictions placed on the use of re-

sources under wilderness designation there could be slight losses in potential increases in income and Federal revenues that could occur under the No Action Alternative.

There is little or no potential for mineral development in the WSA (refer to the Mineral and Energy Resources section for a discussion of the WSA's mineral character). Valid mining claims filed prior to designation could be developed but designation would preclude new leases and claims from being established in the WSA. Precluding exploration and development of minerals would not alter existing economic conditions, but could alter future economic conditions from what they would be with mineral development under the No Action Alternative. Because the potential for mineral development is extremely low, it is estimated that potential mineral-related local income would not be significantly reduced by wilderness designation.

Livestock use and ranchers' income would continue as at present with \$1,620 of livestock sales and \$405 of ranchers' return to labor and investment. The potential for improvements for livestock would be foregone along with any resulting increase in ranchers' income. No such potential range improvements have been proposed.

Increased public awareness of the area resulting from designation could increase nonmotorized recreational use (refer to the Recreation section). Related local expenditures would be small (average of \$4.10 per visitor day statewide).

There would be a potential loss of \$7,620 annually in Federal revenues from the 2,540 acres that could be leased for oil and gas without designation. In addition to these rental fees, any potential royalties from new lease production could also be foregone. The potential for oil development is low.

An estimated annual \$113 of Federal grazing fee revenues would continue.

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